DEVOTED TO
TEXTILE CHEMISTRY
AND
WET-PROCESSING
BLEACHING
DYEING
PRINTING
FINISHING

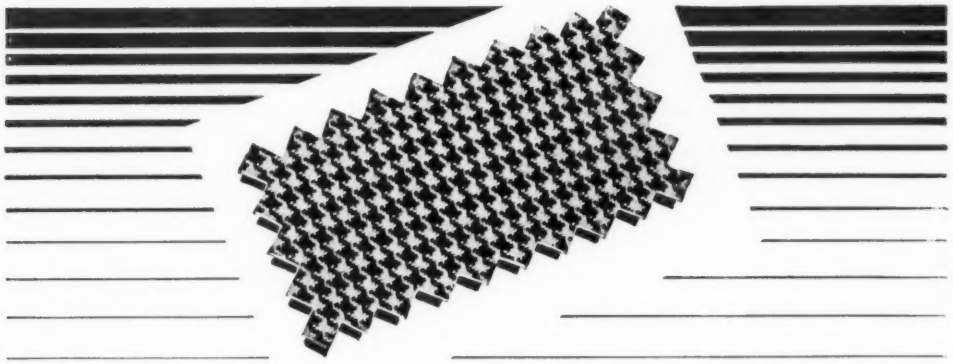
MAY 30, 1949
VOLUME 38, No. 11

AMERICAN DYESTUFF REPORTER

Wet Processing Exposition Number

OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

DELUSTERED VISCOSE AND ACETATE RAYON



How would you dye it?

Geigy
Dyestuff Makers Since 1859

GEIGY COMPANY, Inc.
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BRANCH OFFICES: Boston • Charlotte, N. C. • Chicago • Los Angeles • Philadelphia
Portland, Ore. • Providence • Toronto
IN GREAT BRITAIN: The Geigy Co., Ltd., National Buildings, Parsonage, Manchester

SEE FRONT COVER OF JUNE 27th ISSUE

For Superior

ANILINE BLACKS

1. GOOD PRINTING PROPERTIES
2. MINIMUM TENDERING OF THE FABRIC
3. DENSE, PLEASING TONE OF SHADE
4. EASE OF PREPARATION
5. FREEDOM FROM GRIT

Order . . . CYANAMID AERO* BRAND

YELLOW PRUSSIATE OF SODA
[Sodium Ferrocyanide $Na_4Fe(CN)_6 \cdot 10H_2O$]

YELLOW PRUSSIATE OF POTASH
[Potassium Ferrocyanide $K_4Fe(CN)_6 \cdot 3H_2O$]

PRUSSIATE ANILINE BLACKS are adaptable for printing cotton and rayon in a wide variety of styles in combination with vat dyes, rapid fasts and steam colors. This process is most effective in reducing tendering of the fabric, and minimizes the electrolytic effect on the doctor blade.

When Ordering Prussiates Specify AERO BRAND, your assurance of . . .

1. Uniformly high quality over 99% Yellow Prussiate of Soda or Yellow Prussiate of Potash.
2. Close chemical control from basic raw materials to the finished product.
3. Small crystalline form dissolves readily in hot or cold water.

For dependable supply . . . for authoritative technical service . . . call on Cyanamid.

AMONG CYANAMID PRODUCTS FOR THE TEXTILE INDUSTRY ARE:

Penetrants, Softeners, Finishes, Sizing Compounds, DECERESOL* Wetting Agents, PARAMUL* 115 Water Repellent, and other specialties and Heavy Chemicals. For low-cost chemical equivalent of distilled H_2O . . . FILT-R-STIL* Demineralizing Units.

*Reg. U. S. Pat. Off.

AMERICAN Cyanamid COMPANY

INDUSTRIAL CHEMICALS DIVISION DEPT E5

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

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Coprantine Colors

The way to better

WASH AND LIGHT FASTNESS
ON
VISCOSE RAYON, AND COTTON,
WOOL BLENDS AND ACETATE BLENDS
IN
YARNS, HOSIERY, KNIT GOODS AND WOVEN FABRICS

These colors . . .

are a new class of substantive dyestuffs. They give by the usual direct color procedure, dyeings which when aftertreated, combine with copper salts to form exceedingly stable complex compounds of excellent fastness to both light and washing.

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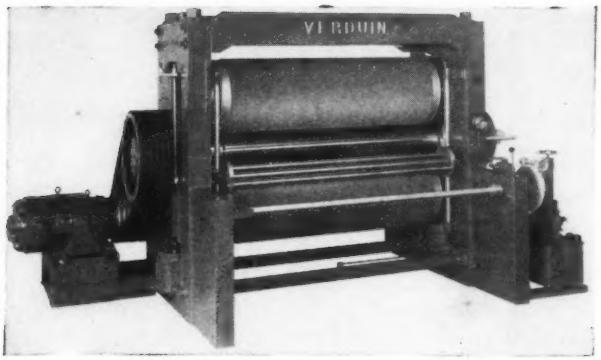
VAT DYES OF THE DOW CHEMICAL CO

ESPECIALLY RECOMMENDED FOR PACKAGE MACHINE DYEING

VERDUIN

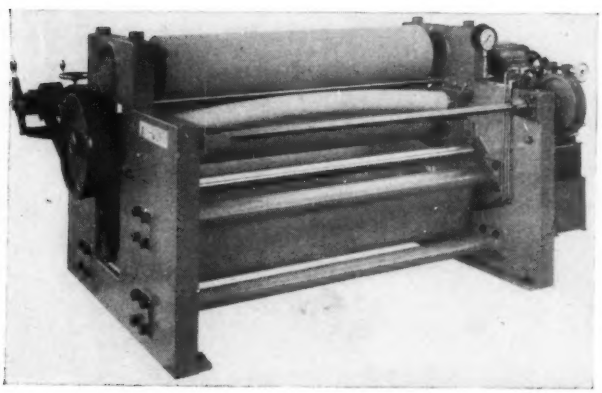


HEAVY-DUTY HYDRAULIC CALENDER

These machines are built for maximum pressure up to 80 tons. Cast-iron frames. Built with any combination of rolls. No clutches, push button controlled. All moving parts on antifriction bearings.

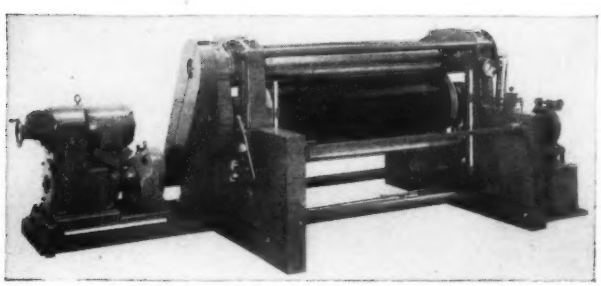
Also

Specialists in manufacturing of calender rolls: Paper—Cotton—Asbestos—Cotton & Husk, etc.



VERDUIN *postwar* QUETSCH

Combining a wide pressure range, variable speeds and superior construction, the Verduin Quetsch can be used for padding and mangling as well as finishing. Available for prompt delivery.



HEAVY-DUTY HYDRAULIC EMBOSSER

Hydraulic pressure (no accumulator) variable speed, antifriction bearings. For paper, cotton, vinyl and finished synthetic goods. Built to your specific requirements.

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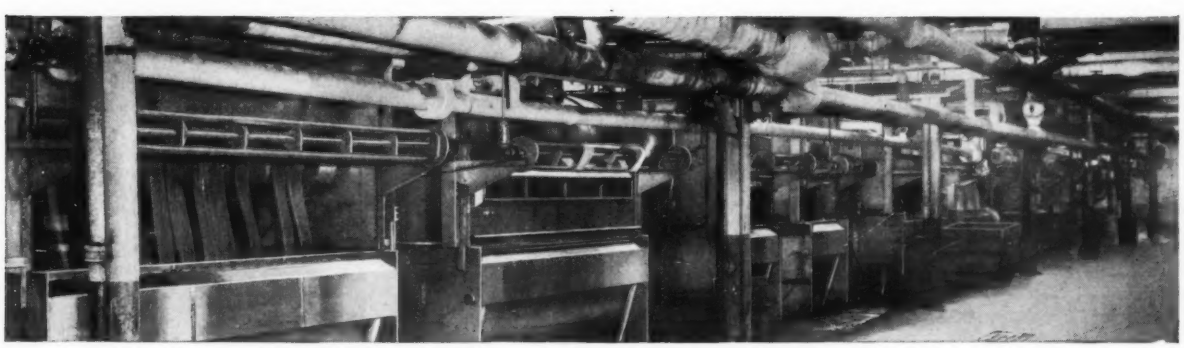
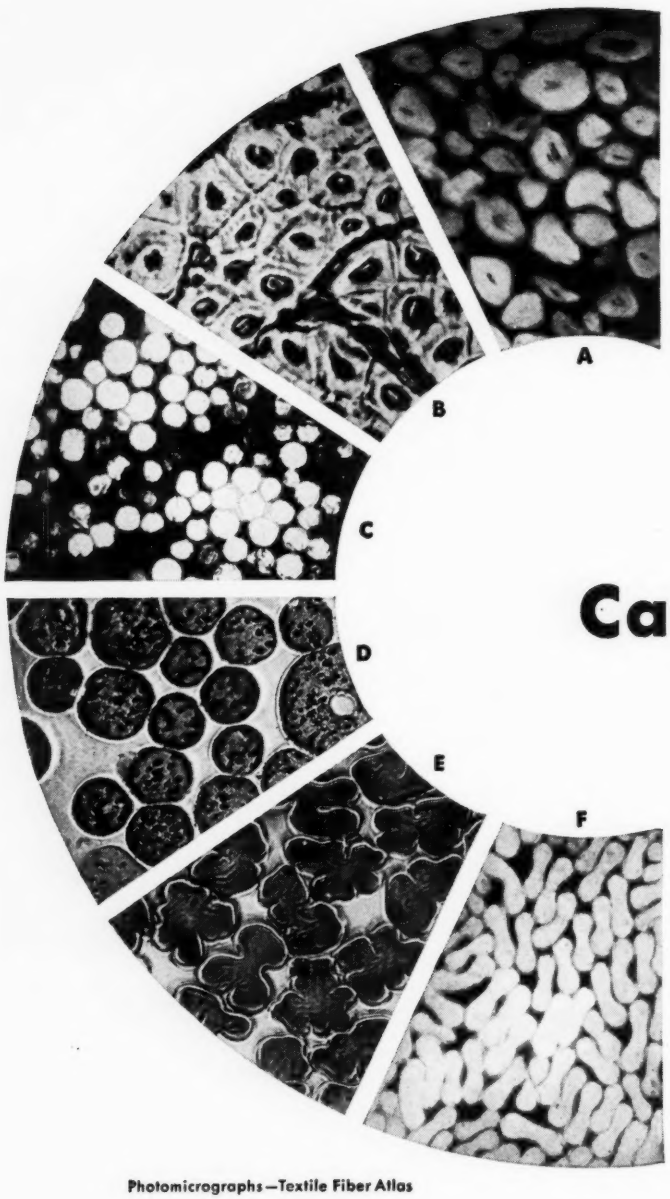


Partial view of 38 Verduin dye becks, courtesy of
United Piece Dye Works, Lodi, N. J.



Photomicrographs—Textile Fiber Atlas

Can you rate as a fiber expert?

You're an expert if you guessed all six. No matter how many of these fibers you named correctly, they're all vital to Stein Hall. Each of these fibers and many more are continually under the scrutiny of our laboratory technicians.

For 83 years, Stein Hall has serviced the textile industry by developing the finest products for warp sizing, printing, and finishing fabrics made from these and other fibers.

Continuous study...endless testing under expert supervision in controlled laboratories means a more efficient operation in your plant.

Trained salesmen will tell you about Stein Hall textile products. Laboratory specialists will back them up. For a textile problem, call on Stein Hall.

Visit us at the Stein Hall Booth, Textile Wet Processing Exposition, New York City.

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A Linen (flax) D Casein
B Jute E Cellulose acetate
C Glass F Vinyon

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COSTS!
SPECIFY THE DETERGENT
WITH GUARANTEED
40% active organic content
Nacconol NR
AMERICA'S LEADING SYNTHETIC DETERGENT
WASHES · WETS · DISPERSES · FOAMS · EMULSIFIES
IN HOT OR COLD SOLUTIONS AT ANY pH
COSTS LESS · DOES MORE
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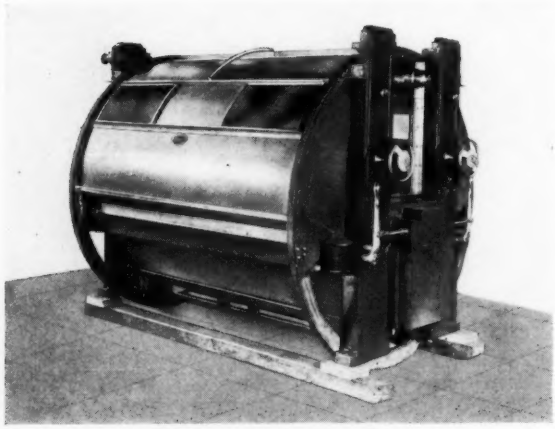
Announcing

A NEW and MUCH MORE EFFICIENT

DYE JIG ENCLOSURE

(Application for Patent Pending)



Glasco Jig Enclosure—Closed

Here's a compact stainless steel enclosure that slides down at a touch of the hand, out of the way for unobstructed use of the jig. When it's closed it's a perfect enclosure.

When it's open, it's out of the way.

—*When closed,* the windows permit full view of the jig in operation.

—*To open* the enclosure, both enclosure doors can be swung *down and under the jig,* completely out of the way for open jig operation.

—*The sections of the enclosure are counter-balanced* and move easily on roller bearings in two circular end tracks, making it extremely easy to open or close the doors.

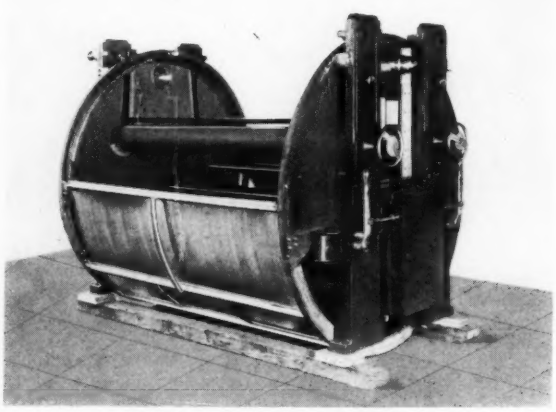
—When doors are down, complete manual operation of the jig is allowed. Steam condensate cannot drip on goods.

—*No blast of steam endangers the operator* when the enclosure is opened. The hot steam goes safely upward.

—No cables, chains, pulleys, or counter-weight posts to obstruct jig operation or get out of order.

—These cylindrical enclosures fit most jig types now in use, and can be refitted readily when new jigs are substituted for older ones.

—Takes full size cloth rolls.



Glasco Jig Enclosure—Open

GLASCO EQUIPMENT CORP.

2 WAIT STREET **PATERSON 4, NEW JERSEY**

Announcement!

ACETATE BLACK DYERS . . .

amazing new developments have been taking place
in the improvement of our **AMACEL* BLACKS.**

Absolutely tops! the **NEW, IMPROVED**

Amacel BLACKS

. . . BLACK G.S.
. . . BLACK IV EXTRA

As developed with Developer BON or BONASOL* these new, improved *Amacels* give the finest **developed blacks** obtainable. Perfected through the latest scientific advancements, they offer to a greater degree than ever, better fastness—simplified application—consistent shade purity. Both are suitable for box or jig . . . both are highly dispersed—**practically water soluble**—holding stain on adjacent white viscose to a minimum.

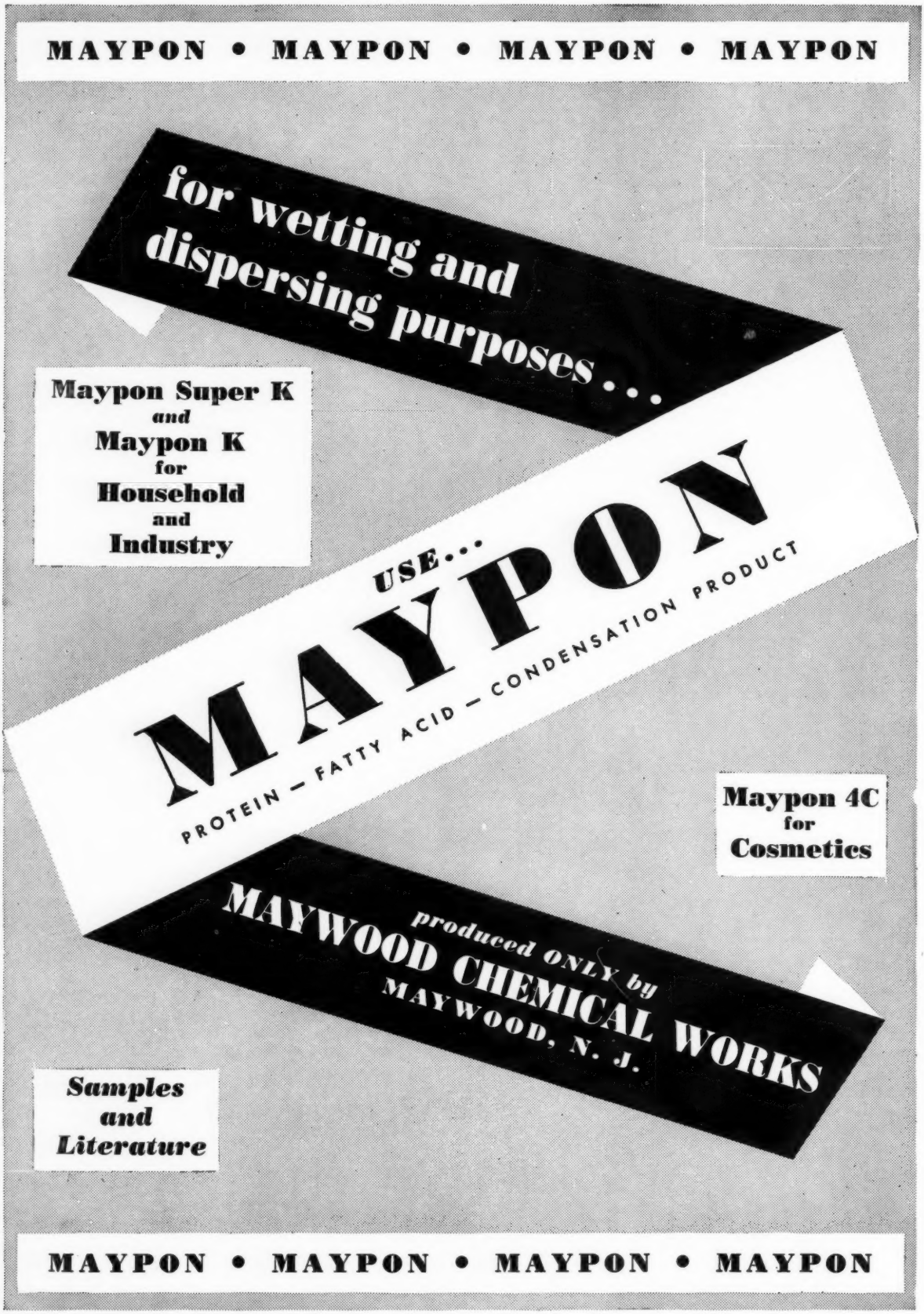
American Aniline was the first successful U. S. producer of dyes designed especially for acetate fibres, and high quality has kept *Amacels* at the top in this field.

For detailed information on *Amacel Black G.S.* and *Amacel Black IV Extra,* as well as special data regarding your own particular requirements, consult our nearest branch. A.A.P. technicians are always happy to be of service.

AMERICAN ANILINE PRODUCTS, INC.

50 Union Square, New York, N. Y. • **Plant: Lock Haven, Pa.** • **Branches:** Boston, Mass. Providence, R. I. • Philadelphia, Pa. • Charlotte, N. C. • Chicago, Ill. • Los Angeles, Cal. Chattanooga, Tenn. • **Dominion Anilines & Chemicals Ltd.** • Toronto, Canada • Montreal, Canada

*Reg. U. S. Pat. Off.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Maypon Super K
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Maypon K
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and
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USE . . .
MAYPON
PROTEIN — FATTY ACID — CONDENSATION PRODUCT
Maypon 4C
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produced ONLY by
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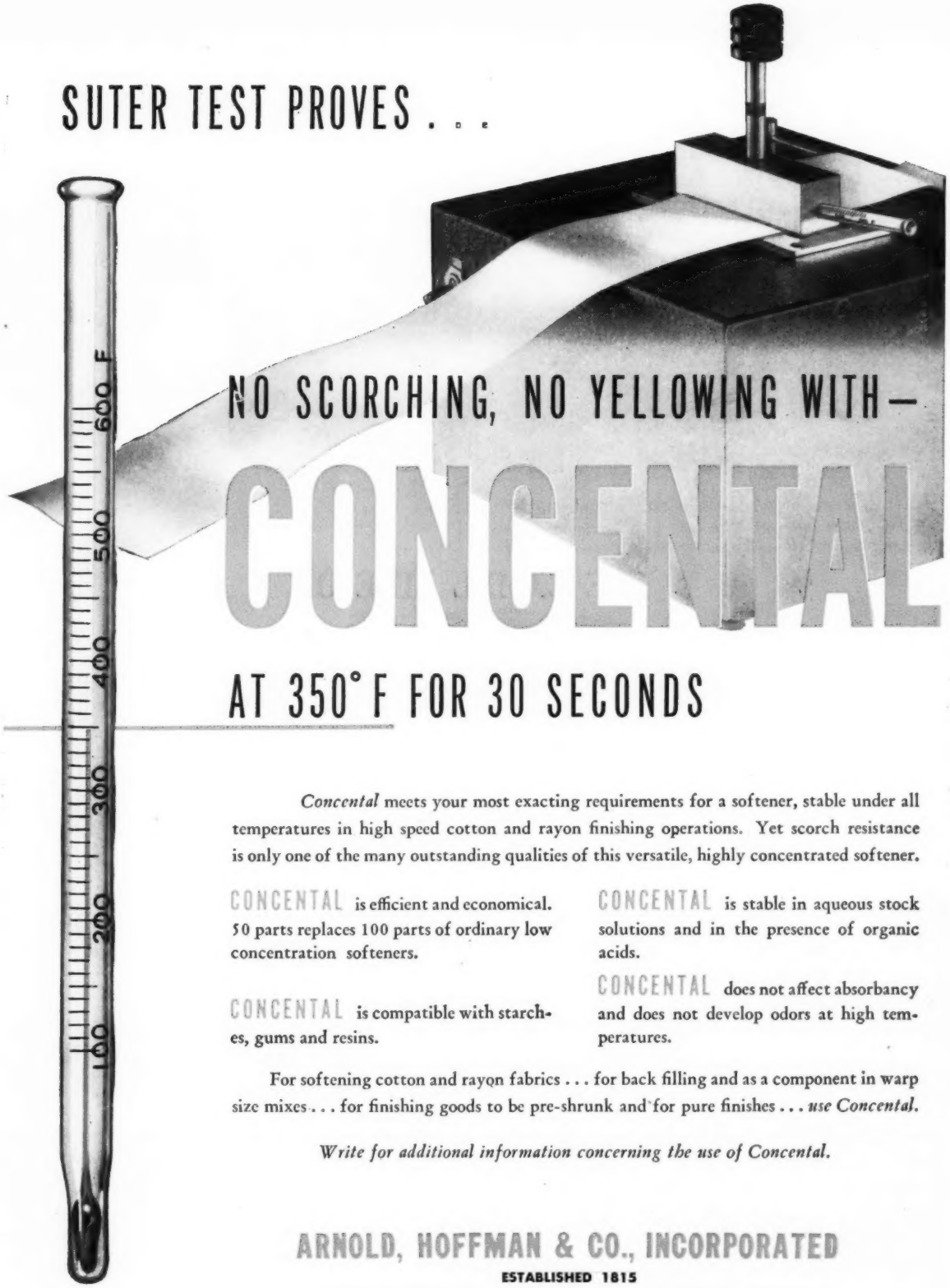
SUTER TEST PROVES . . .



NO SCORCHING, NO YELLOWING WITH—

CONCENTAL

AT 350° F FOR 30 SECONDS

Concental meets your most exacting requirements for a softener, stable under all temperatures in high speed cotton and rayon finishing operations. Yet scorch resistance is only one of the many outstanding qualities of this versatile, highly concentrated softener.

CONCENTAL is efficient and economical. 50 parts replaces 100 parts of ordinary low concentration softeners.

CONCENTAL is compatible with starches, gums and resins.

CONCENTAL is stable in aqueous stock solutions and in the presence of organic acids.

CONCENTAL does not affect absorbancy and does not develop odors at high temperatures.

For softening cotton and rayon fabrics . . . for back filling and as a component in warp size mixes . . . for finishing goods to be pre-shrunk and for pure finishes . . . *use Concental.*

Write for additional information concerning the use of Concental.

ARNOLD, HOFFMAN & CO., INCORPORATED

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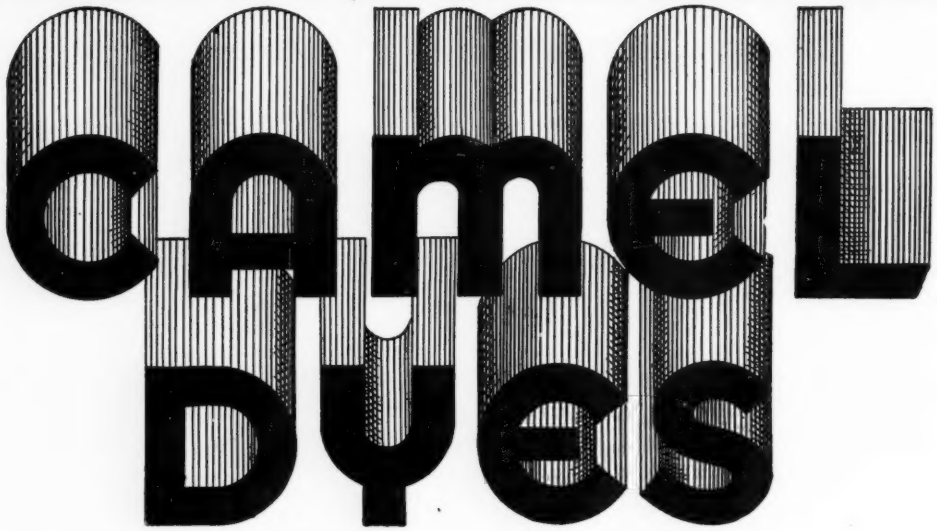

THE CAMEL LINE OF
DEPENDABLE DYESTUFFS
has served the textile mills of America without interruption since 1876.

This broad experience assures
PROMPT • EFFICIENT • ECONOMICAL SERVICE
TO MEET ALL DYESTUFF REQUIREMENTS

JOHN CAMPBELL & COMPANY, INC.
75 HUDSON STREET • NEW YORK CITY
TELEPHONE: BArclay 7-6228-6229
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BRANCH OFFICES AND WAREHOUSES:
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how synergistic action of SANTOMERSE No. 1 and TSPP pays off after desizing

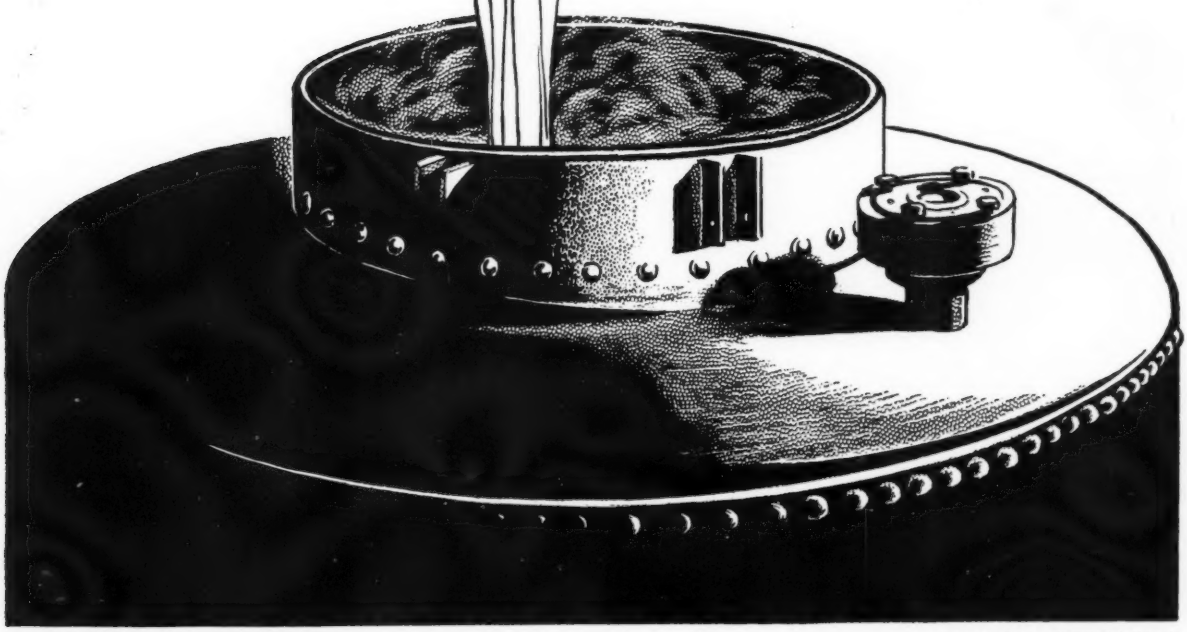
When you send goods to the kier after desizing, synergistic action of Santomerse No. 1 and Monsanto Tetrasodium Pyrophosphate gives you a bonus of extra detergency and extra economy. Synergistic action is the cooperation of the two Monsanto products to produce higher detergency than the average of the two used separately . . . higher than either used alone.

This synergism is effective in removing minerals, natural waxes and foreign matter and holding particles in suspension so they cannot settle back into fabrics. Complete rinsing is easy. Goods come out in perfect condition for succeeding processes.

You get economy in two ways. First, you save in price because TSPP costs even less than economical Santomerse No. 1, therefore synergistic action gives you more detergency at lower cost. Second, you'll find economy in the small amounts that you'll use. For example, excellent results in the kier come from using one-fourth of one per cent of Santomerse No. 1, one-fourth of one per cent of TSPP and 4 per cent of caustic soda (based on weight of goods).

For information and quotations on Santomerse No. 1 and TSPP, contact the nearest Monsanto Sales Office, mail the coupon or write: MONSANTO CHEMICAL COMPANY, Desk E, Phosphate Division, 1779 South Second Street, St. Louis 4, Missouri.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.



MONSANTO CHEMICALS

MONSANTO CHEMICAL COMPANY
Desk E, Phosphate Division
1779 South Second Street, St. Louis 4, Missouri

Please send items checked: Data and quotations on _____Santomerse No. 1; _____TSPP.

Name_____Title_____

Company_____

Street_____

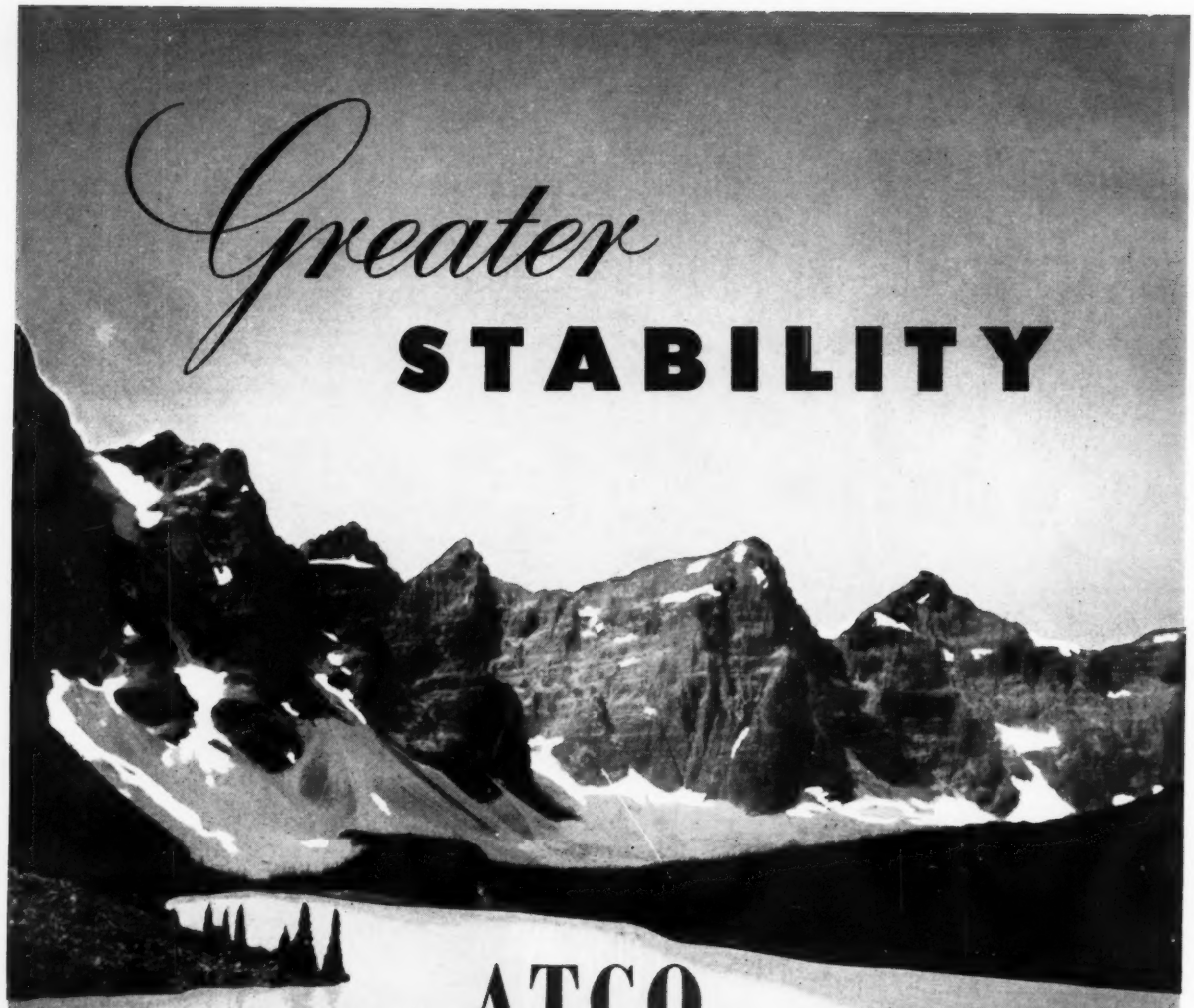
City_____Zone_____State_____

MONSANTO DETERGENTS AND WETTING AGENTS

- Santomerse* No. 1
- Santomerse No. 3
- Santomerse No. 3 (Paste)
- Santomerse 30X
- Santomerse D
- Santomerse S
- Sterox* CD
- Sterox SE
- Sterox SK
- Sterox 5
- Sterox 6

*Reg. U. S. Pat. Off.

SERVING INDUSTRY . . . WHICH SERVES MANKIND



Greater
STABILITY

ATCO
POLIPOL OILS

Double Sulphonated Oils. Not affected by the presence of electrolytes in the dye bath. Help promote level dyeing. Give softer hand in finishing operations. Ideal softener or lubricating agent in use with synthetic resins.

Technical Bulletin on request.

ATLANTIC CHEMICAL CO., INC.

CENTREDALE, RHODE ISLAND

Exclusive Eastern Distributors
Reichhold Fabrez Synthetic Resins

RCI — the ATCO Products

FROM TAILOR'S CHALK

TO THE NEW RAINWEAR

Nothing takes the place of Glycerine

In the textile industry, a wide range of products benefit from one or more of the many properties of glycerine.

As a thickener, humectant, and dispersant, glycerine is valuable in printing pastes. As a softener, it's a standard ingredient of sizing compositions. As a humectant, it prevents drying, stiffness, and caking in lubricating solutions. As a chemical intermediate, it's essential in the manufacture of those alkyds which are making possible today's crease-resistant fabrics . . . non-snag nylons . . . rainproof garments.

Glycerine's combination of physical and chemical properties can *not* be matched by any other product. That's why in the textile industry—and in almost any industry—*Nothing takes the place of glycerine!*

GLYCERINE PRODUCERS' ASSOCIATION
295 Madison Avenue
NEW YORK 17, N. Y.

Technical GLYCERINE NEWS

FLAME-RESISTANT WORK UNIFORMS may now be made by use of an alkyd resin, according to the report of a government research laboratory. The alkyd (an important end-product of glycerine) is said to impart good laundering-resistance as well. (T-7)

★ ★ ★

TO PREVENT CLOGGING OF PRINTING SCREENS due to thickening agents which tend to dry, add glycerine to the print colors, one authority suggests. (T-8)

★ ★ ★

FOR SHARP PRINTS ON TEXTILES, a water-in-oil emulsion is claimed to be superior to the starch pastes used with conventional dyestuffs. A typical composition contains an aqueous dyestuff solution emulsified into a water-immiscible solution of film-forming substances, one of which is an alkyd resin. (T-9)

★ ★ ★

LONGER LIFE FOR NYLONS. Glycerine has become an important help in handling nylons in factory and retail store, according to an article published recently. Applied to the hands of machine operators and clerks, glycerine is said to prevent many of the snags which send a considerable proportion of the stockings to the scrap pile. (T-10)

★ ★ ★

A FUNGUS-PROOFING COMPOSITION for treating fibers made from cellulosic substances contains a hydroxyquinoline and an alkyd resin among other ingredients. Alkyds are important end-products of glycerine. (T-11)

GLYCERINE PRODUCERS' ASSOCIATION, DEPT. 13
295 MADISON AVENUE
NEW YORK 17, N. Y.

I should like to know the source of those items appearing in Technical Glycerine News which I have checked below.

☐ T-7 ☐ T-8 ☐ T-9 ☐ T-10 ☐ T-11

NAME.....

COMPANY.....

ADDRESS.....

DON'T FAIL TO SEE THIS MACHINE AT THE TEXTILE WET-PROCESSING SHOW.

PREFERRED for NYLON

When dyeing Nylon a uniform, minimum tension is so important that this Van Vlaanderen machine is being used more and more. Here's why . . . both let-off and take-up rolls are driven simultaneously* giving a nearly constant cloth speed with a uniform, minimum tension.

Enclosures for this machine and automatic stopping and reversing equipment are available. We will be glad to have your inquiry.

*** On conventional jigs the rolls are driven alternately and the tension increases with the speed as the take-up roll increases in size.**

VAN VLAANDEREN MACHINE COMPANY

370 Straight Street • Paterson 3, New Jersey

World's largest manufacturer of machines for processing modern fabrics

AMBERTEX M provides the razor-sharp detail that makes small, figured patterns fairly *dance!* What is it? An entirely new, ready to use printing thickener that replaces conventional, cook up British Gums for *Vat Colors*—

And delivers results like these . . .

AMBERTEX M adds the excitement of *sharp* outlines to small or complex patterns. Color yield? In one plant, 20 per cent higher than ever before! AMBERTEX M deposits a soft, pliable film—ideal for Bemberg sheers and similar materials. Excellent penetration minimizes mark-offs. Produces smooth, uniform blotches. Washes out easily and thoroughly!

AMBERTEX M requires no cooking or cooling, saving you steam and labor. Its uniform viscosity and non-jelling properties permit higher printing speeds and cleaner operation on your machines. Actually cuts the number of seconds due to printing imperfections! Rayon and cotton printers especially can benefit from this unique, new thickening agent. Write for a test sample.

National also produces: CLEARFILM for sheer, lustrous finishes; FLOTEX to replace natural gums for printing; TABLE ADHESIVE for screen printing; FLOCK ADHESIVE 970 for chenille flock printing; HOOSIER PEARL CORN STARCH . . . THIN BOILING CORN STARCH . . . CHLORINATED CORN STARCH . . . and DEXTRINES.

Address: 270 Madison Ave., New York 16; Boston, Philadelphia, Atlanta, Indianapolis, Chicago, San Francisco, and other principal cities. *In Canada:* National Adhesives (Canada) Ltd., Toronto and Montreal.

Photo courtesy of American Bemberg Corp.

intricate patterns

... without distortion

New!

A VAT THICKENER FOR

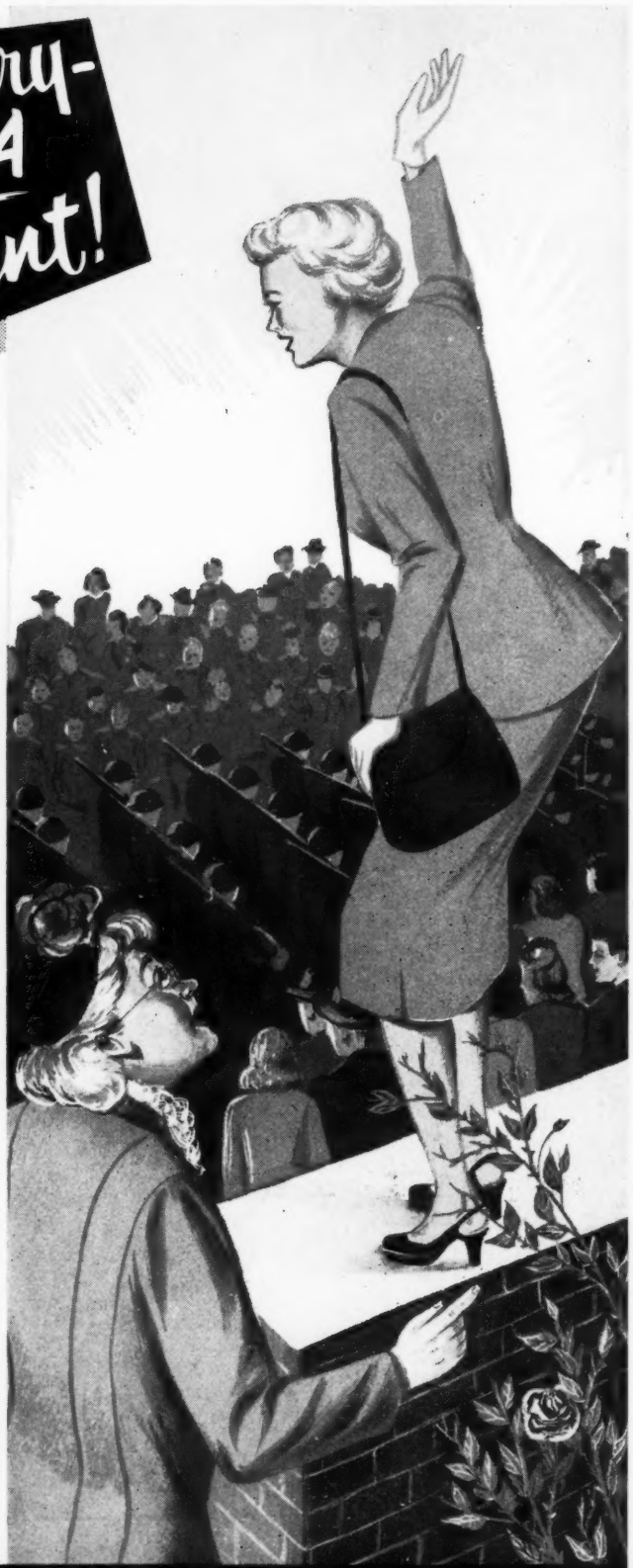
RAYON and COTTON PRINTING

National

STARCH PRODUCTS

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

She needn't worry- they're EXTRA Snag Resistant!



ETERNALURE

RESIN FINISH FOR NYLONS

adds extra snag resistance to hose, as well as dainty beauty, smooth fit and pleasing dullness. She can wash her nylons as often as she wants, without any harmful effects. The finish lasts for the life of the hose.

When you use ETERNALURE you not only produce better selling nylons . . . you also get many worthwhile production economies. ETERNALURE gives a body to the sheerest nylons that makes them easier to handle with fewer pull threads. Your "Menders" and "Seconds" are materially reduced. You get excellent dulling on multi-filament hose.

The use of ETERNALURE does not call for any changes in equipment or processing. There's no need for curing or heat treatments. It's easy to give it a full mill-scale trial. Then study the breakdown report. ETERNALURE will come out on top every time!

ONYX OIL & CHEMICAL COMPANY
JERSEY CITY 2, N. J.
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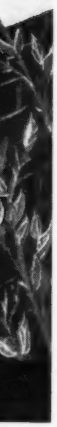
For Export: Onyx International, Jersey City 2, N. J.

onyx RESIN FINISHES FOR HOSIERY



Rapidogens for printing fast colors on cotton, rayon and linen

brilliant colors outstanding for clarity and depth.

extensive color range many important shades are exclusively GDC.

fastness excellent fastness to washing—very good fastness to light.

powders and solutions both forms are available.

application develop rapidly in acid ageing—many can be developed in neutral ageing.

versatility can be printed alongside Indanthrenes and Algosols.

economy combine quality with ease of application.

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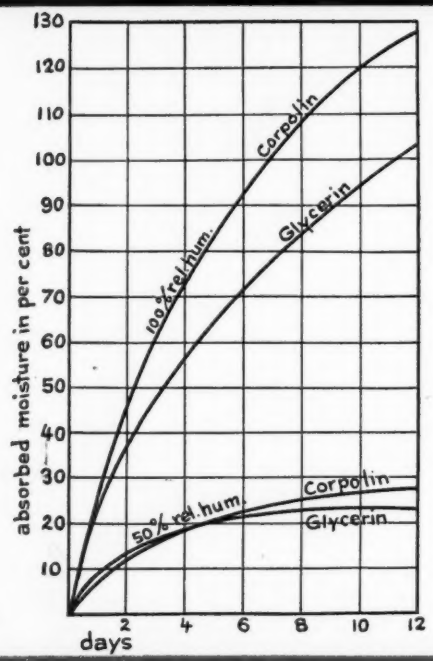

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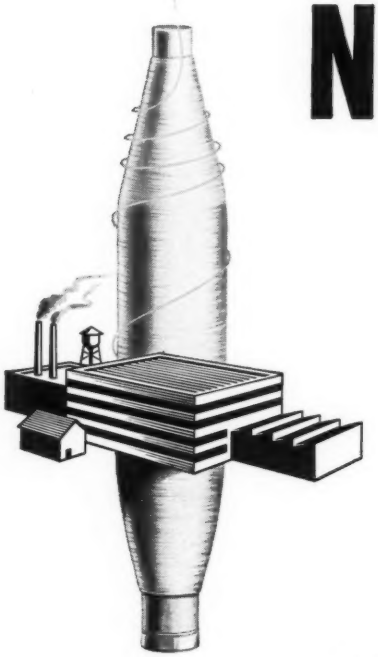

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Wet Processing Exposition Number

AMERICAN

DYESTUFF REPORTER

Incorporating Textile Colorist and Converter

NORMAN A. JOHNSON, B.T.C.
Editor

MYRON D. REESER
Advertising Manager

GRACE B. BURTON
Production Manager

M. H. MORGAN
Circulation Manager

Official Publication of the Proceedings of the American Association of Textile Chemists and Colorists.

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HOSIERY INDUSTRY WEEKLY
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MAY 30, 1949

VOLUME 38 NUMBER 11

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J. A. Crumley

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Wet Processing Exposition Number

AMERICAN

DYESTUFF REPORTER

VOLUME 38 | MAY 30, 1949 | NUMBER 11

TEXTILE WET PROCESSING EQUIPMENT AND SUPPLIES EXPOSITION

71st Regiment Armory, 34th Street and Park Avenue, New York City, June 6, 7, 8, 9 and 10

THE first Textile Wet Processing Equipment & Supplies Exposition will open at the 71st Regiment Armory, 34th Street and Park Avenue, New York City on Monday, June 6th and will continue through the balance of the week, closing on June 10th. Show hours are as follows:

Monday, June 6th—2 P.M. to 10 P.M.
Tuesday, June 7th—2 P.M. to 10 P.M.
Wednesday, June 8th—2 P.M. to 10 P.M.
Thursday, June 9th—2 P.M. to 10 P.M.
Friday, June 10th—10 A.M. to 4 P.M.

Several thousand tickets have been distributed in advance, indicating that the attendance will be large. In addition, any member of the trade will be admitted after registering at the entrance to the show. The show is sponsored by Expositions for Trades Inc., 36 West 47th Street, New York 19, N. Y., Arthur Tarshis, Exposition Manager.

The AMERICAN DYESTUFF REPORTER will be located in Booth No. 1 and you are cordially invited to visit us.

The following is a description of the various exhibits:

American Association of Textile Chemists and Colorists

Booth Number 95

The following A.A.T.C.C. apparatus will be on display:

WATER RESISTANCE.—This display will consist of a Spray Rating Tester, a Hydrostatic Pressure Tester and a Rain Tester. The test procedures on each of these pieces of equipment will be demonstrated.

LIGHT FASTNESS.—The exhibit will include a Fade-Ometer and samples and charts will be on display.

WASH FASTNESS.—A Launder-Ometer will be in operation. Many of the results of the investigation on the importance of abrasion in wash fastness evaluation, as well as the various types of containers developed and tested during this research, will be on display.

DETERGENCY.—The Detergency Comparator will be in operation. Sample pairs of knit tubing, stained with a standard soil, are washed under identical conditions and after rinsing and drying are compared by means of a reflectometer to rate the efficiency of the detergents under test.

FLAMMABILITY. — Equipment for measuring the speed of burning of textiles in general but more particularly pile fabrics and lightweight fabrics which tend to burn rapidly will be shown.

FIRE RESISTANCE.—Fire resistance testing equipment as well as samples of commercially treated flame resistant fabrics will be on display.

PERSPIRATION.—Methods for testing the fastness to perspiration will be demonstrated. The new and improved plate method will be on display.

INSEST PEST DETERRENTS.—Equipment for testing the efficiency of insect pest deterrents consisting of a life cycle cabinet in which uniform conditions of temperature and humidity are maintained will be on display.

CROCKING.—Three Crockmeters will be on display: the regular standard machine, the dual machine and a Shirley type machine, which in this case is a regular Crockmeter to which has been attached the various features introduced by the Shirley Institute of Bradford, England. Color Transference Charts which are used in determining the degree of crocking will be shown.

In attendance: G. R. Thompson and E. P. Johnstone.

Bemis Bro. Bag Co.

Brooklyn 32, New York
Booth No. 4

Featured at this exhibit will be Tite-Fit Tubing. This is a wrapping in the form of a flexible tubing, having the unique feature of fitting various sizes of objects, with a saving in both labor and material. It usually is made of burlap and is put up in rolls. Also on exhibit will be cotton and burlap bags and waterproof paper-lined bags.

In attendance: R. R. Radford and E. P. Fuller.

S. Blickman, Inc.

Weehawken, New Jersey
Booth No. 47

This exhibit will feature corrosion resistant stainless steel wet processing equipment: a stainless steel dye box, a material handling truck, a cylinder, and stainless steel pails, buckets and dippers.

In attendance: Bernard I. Blickman, George Langhirt, Edgar Olsen, T. Van Wyngarden and W. Kahn.

H. W. Butterworth & Sons Co.

2417 East York Street, Philadelphia, Pa.
Booth Nos. 78, 79 and 80

Exhibited will be the following machines: drive end tenter, saturator, bullet padder and squeezer. There will also be models of Butterworth J-Boxes for continuous bleaching as well as a model washer, saturator and squeezer. Drawings and blueprints of the Butterworth Junior Bleaching Unit will be on display.

In attendance: Harry W. Butterworth, Jr., DeHaven Butterworth, Sr., J. Ebert Butterworth, Frederick N. Spoerl, E. S. Pierce, John H. S. Spencer, Thomas Davis, Paul Landwher, Joseph Sippel, DeHaven Butterworth, Jr., Joseph W. Tucker, E. H. Kelly, R. W. Lampman, J. J. Meyer and J. C. Williams.

Cadgene Machinery Company

Fifth Avenue and McLean Boulevard, Paterson 4, New Jersey
Booth No. 24

This exhibit will include a dye beck, tubers and infra red equipment.

In attendance: Jacques Cadgene, Partner.

Crucible Steel Company of America

405 Lexington Avenue, New York 17, N. Y.
Booth No. 62

This exhibit will feature a motion picture showing the processing of yarn where stainless steel is employed. Other uses of stainless steel in the textile field will also be shown.

In attendance: J. G. Glenn, Manager, Stainless Sales Division, S. R. Reynolds, New England District Representative, E. W. Hopper, Chief Chemical Engineer, Clarence Merritt, Manager, Central Metallurgical Office, W. H. Wiewel, President, Trent Tube Company, a subsidiary of Crucible, R. E. Christie, Executive Vice-President, Michael Strumm, Advertising Manager, and others.

Cutting Room Appliances Corp.

45 West 25th Street, New York 10, N. Y.
Booth No. 41

The following equipment will be on display:

CRA Electromatic Cloth Spreader—electrically operated, for spreading or folding all types of fabrics in preparation for cutting by cutting machine, clicker or straight knife.

CRA Electric Knit Goods Laying Up Machine—for tubular knit fabrics; electrically operated, lays and centers tubular knit goods without stretch or tension.

CRA Measuring and Inspecting Machine—electrically operated, for checking all types of piece goods for damages or yardages. It is stated that special features on the machine make it easier in handle and the machine is built lower and more compact to take up less space.

CRA Metal Sectional Cutting Tables—with Masonite top and exclusive metal edge channel to prevent top from lifting away or warping. It is made up in four foot sections for ease in installation.

In attendance: Dave Grossberg, Sales Manager, Al Green, Sol Lerner, Bernard Nathanson, Harold Liebman, A. I. Gilbert, H. Walter Gilbert, Harrison Bard, and Mrs. Lillian Newcorn.

Eastern Stainless Steel Corp.

P. O. Box 1975, Baltimore 3, Maryland
Booth No. 2

On display will be stainless steel sheets and plates featuring the new "100 Grit" finish.

In attendance: N. L. Ellis, Sales Promotion Manager, R. F. Johnston, Asst. General Sales Manager, E. H. Neill, C. T. Lynch, J. A. Emich, District Sales Representatives, R. G. Leary, General Sales Manager, E. A. Hagenmuller, Assistant to the President, I. C. Clingan, W. H. Braun, Metallurgists.

General Dyestuff Corp.

435 Hudson Street, New York 14, N. Y.
Booth No. 16

New technical advancements in the application of dyestuffs will be the theme of this exhibit. A series of new quality-improving, cost-saving, and time-reducing techniques will be shown, including:

Improving end use acceptance with faster dyes.

Advantageous use of Vat Acid Process.

Advantage of one-bath Cellitazol Process.

Algosols and Indanthrenes versus Chromes for wool.

Fast colors on pre-shrunk wool.

Simplification of process and better quality through textile auxiliaries.

Rendering of fabrics resistant to moths and carpet beetles.

Also shown will be a laboratory model of a continuous dyeing machine which is said to be versatile and economical with respect to continuous dyeing, washing, pretreating and aftertreating of textile fabrics.

The importance of color in the textile processing field will be emphasized by a background alight with every hue in the spectrum.

In attendance: J. Robert Bonnar, Dr. H. E. Hager, J. H. Hennessey, L. S. Thompson, H. C. Borghetty, P. J. Cloquette, Dr. H. Luttringhaus, J. E. Flint and F. F. Jacobs.

Glasco Equipment Corporation

Two Wait Street, Paterson 4, New Jersey
Booth No. 83

This exhibit will include stainless steel equipment for wet processing consisting of the following units: newly designed stainless steel jig enclosure, newly designed stainless steel enclosed dye beck, stainless steel dyehouse truck box, stainless steel dry can and miscellaneous small equipment.

In attendance: M. G. Peck, President, W. Semenyna, Chief Engineer, and W. Swanson, Textile Sales Engineer.

Hart-Moisture-Meters

Grand Central Terminal, New York 17, N. Y.
Booth No. 8

The exhibit will consist of a display of instruments with a variety of accessories showing the many different ways in which they may be applied to the materials of the textile industry in all their different forms. The Hart-Moisture-Meter is said to give accurate, instantaneous readings over a wide band of moisture percentages and is offered with the range and calibration set up to meet individual requirements. It is offered in both battery operated and line operated models. The comparison method of measurement is said to insure continued accuracy regardless of tapering battery voltage or other variables.

In attendance: R. S. Hart and W. E. Barnett.

James Hunter Machine Company

North Adams, Massachusetts
Booth No. 52

A standard size 8' piece dye kettle will be exhibited. This machine will be equipped with the new herringbone hump reel and an entirely new positive circulation system. One of the commonest troubles encountered by dyers is the temperature variation in the front to back of piece dye kettles, causing uneven dyeing. During the time when the temperature is being brought to the boil, there is from 15-20 degrees difference in the temperature at the front where the steam coils are

placed and at the back of the kettle. During the boiling period, this temperature difference is as much as 10-15 degrees, which means that part of the dye liquor never actually boils regardless of how long this part of the cycle is maintained. The Hunter jet circulation piece dye kettle is an entirely new development which is said to solve this problem. The majority of the heating steam is fed into the kettle through a series of nozzles. Each nozzle projects into a cone arrangement in the false front. The steam jet acts as a jet pump and draws water along with it into the cone and from there into a passageway formed by the bottom of the kettle and the false bottom. This false bottom extends across the entire width of the kettle and curves back to a point just below the lowest level reached by the dye liquor during the cycle. In this way the steam and water which are ejected from the cone and nozzle at the front of the kettle are thoroughly mixed and blended by the time they reach the back end of the false bottom passage. From this point the liquor flows forward through the kettle, maintaining a uniform circulation and temperature level. An additional advantage of this kettle is said to be that the dye, as it is added in the front of the kettle, is carried by the steam jets under the false bottom and is completely blended with the hot water before it strikes the cloth, eliminating the possibility of the concentration of dye striking any one particular part of the fabric. In the same manner, when the goods are being rinsed and cold water is being added, it has an opportunity to temper before striking the cloth, and the flow or circulation is also in the direction of the cloth. The "water hammer" is eliminated in this kettle.

Also exhibited in this booth will be the Drimeter used for controlling the amount of moisture in fabrics. This is a product of Fielden Electronics, Inc., Huntington Station, New York.

In attendance: James H. Hunter, Vice-President, J. Everett Burdick and Ernest Cannity, Sales Engineers, and R. V. Coles, Vice-President of Fielden Electronics, Inc.

Kearny Manufacturing Company, Inc.

Kearny, New Jersey
Booth No. 45

The following products will be exhibited:

Hygrolit yarn conditioning machine—for the replacement of moisture in cones and dye packages. This machine is said to provide an effective and economical means of imparting a balanced moisture content to yarn in package form. The conditioning chemicals used in conjunction with the machine contain hygroscopic ingredients, lubricants and fungicides in order to impart lubricity and to protect against mildew.

Midget psychrometer—for instant determination of moisture content of textiles. This is said to be accurate within a tolerance of one-half of one percent and is especially designed for practical spot checking of moisture in the various phases of the textile industry. It operates on standard dry cell batteries.

Illustration of Hygrolit cloth conditioning and dewing machine—for the application of a controlled and uniform Hygrolit moisture to the fabric following the pressing operation. It is said to remove immediately the harsh and dry condition and restore the natural life and beauty to the cloth.

Textile finishing chemicals—featuring Pluramine S-100 which can be used for wetting and penetration, scouring, dye leveling and soaping, dispersing and emulsifying, or finishing.

Herbert Oxy Neutralizer Bar—for elimination of static electricity.

In attendance: C. F. Egues, Sales, Dr. K. Heyman, Research, A. R. Robbins, Chemical Engineer and W. O. Slimback, Sales Manager.

Micro-Lite Co., Inc.

44 West 18th Street, New York 11, N. Y.
Booth No. 3

Exhibited will be the Micro-Line Counter which is said to give accurate instantaneous counts of textile fabrics. The counter produces a moire pattern against the weave of a fabric. Numerous, precisely engraved converging lines form the field on which the moire pattern appears. Along the sides of the field are the precise calibrations showing lines to an inch or lines to a centimeter. By positioning the counter on the fabric, you get the exact horizontal or vertical count of the weave. The Micro-Line Counter is said to eliminate the tedious work of counting individual lines, save time, eliminate the torture of eyestrain, and prevent errors in count.

In attendance: A. Gelardin, D. Green, James B. Loughlin and others.

Mount Hope Machinery Company

42 Adams Street, Taunton, Massachusetts
Booth No. 15

The following general type of products will be shown:

Guiding and feeding equipment for open width fabrics—standard stainless steel guiders, precision stainless steel guiders, guider bracket and floor stands, open width tension devices, adjustable tension bars, continuous roll feeds, open width draw rolls.

Opener equipment for automatic opening of cloth from the rope—standard stainless steel guiders, guider bracket and floor stands, automatic turn table detwisters, adjustable tension squeezers, overhead sheaves, turnaround rolls, stainless steel poteyes, plaiters, draw rolls.

Free wheeling expanders—for producing maximum width and eliminating wrinkles on fabrics, paper and plastic film, and for evenly distributing tire cord fabric. 4¼" diameter expanders for handling fabrics up to 114" wide, 6¼" diameter expanders for greater widths, adjustable expanders, batcher expanders.

Weft straighteners — skewed weft straighteners and bowed weft straighteners.

There will be a running demonstration of cloth opening equipment, featuring the adjustable tension squeezer, overhead sheaves, guiders and a newly designed draw roll.

In attendance: J. D. Robertson, President, J. B. Hammett, Sales Manager, John H. Andresen and H. Hartley of John H. Andresen, Inc., Paterson, N. J., representatives in southeastern New York, New Jersey and Pennsylvania. There will also be a number of other representatives.

John P. Nissen, Jr., Co.

Glenside, Pennsylvania
Booth No. 75

Writing tubes containing dye resist and bleach proof colors (or inks) for marking textiles before processing will be exhibited. Bleach proof color is used wherever any form of bleaching is done. It is said to be particularly well adapted for marking underwear, cotton goods, etc. and for bags and canvas goods which must withstand hard weathering and washing. Dye resist colors are used to mark fabrics where permanent identification is required, from the time the goods leave the loom until it is finished in the finishing plant. It is stated that these marks will resist soaping, washing, degumming, fulling, caustic, scouring, carbonizing, and dyeing.

In attendance: Chandler Ford and Milton A. High, 3rd.

Perfecting Service Company

6140 Cottage Grove Avenue, Chicago 37, Illinois
Booth No. 14

Rotary Unions, which are used extensively to apply steam, water or air to revolving cylinders or drums, such as dry cans, slashers, calendars, embossing and printing machines, will be shown. Rotary

(Concluded on page 435)

SODIUM SILICATES IN THE TEXTILE INDUSTRY

REYNOLD C. MERRILL
Philadelphia Quartz Co., Philadelphia 6, Penna.

Abstract

The textile industry uses various sodium silicates to supply at a low cost detergent, buffering, peroxide-stabilizing, coating, adhesive and colloidal properties. They are thus useful in kier boiling and scouring operations, bleaching, weighting, sizings and coatings, dyeing and printing, fireproofing and special uses.

APPLICATIONS of various sodium silicates in the textile industry depend on their ability to supply at a low cost detergent, buffering, peroxide-stabilizing, coating, adhesive, and colloidal properties. Variations in the proportion of alkali (Na_2O), soluble silica (SiO_2) and water in the more than 50 commercial products containing these three constituents affect each of these properties to different extents. The silicates of most interest to the textile industry are characterized in Table I.

Kier-Boiling and Scouring Operations

Many uses of sodium silicates in the textile industry involve their detergent action either by themselves or as builders for soaps *(55)* and synthetic detergents. Tests with a typical soap under laundry conditions show that the metasilicate should be used at concentrations from 0.02 to 0.04% Na_2O for maximum efficiency in soil removal. Under these conditions any loss in breaking strength of the fabric is negligible even after 50 washes. For ordinary laundry work using 0.1% soap, doubling the metasilicate concentration from 0.05% to 0.1% gave a 4% increase in soil removal, whereas decreasing it to 0.025% decreased soil removal by 33% *(65)*.

Equal parts of metasilicate and soap or detergent are more efficient and economical than soap or detergent alone for soaping off prints and washing back grays used for printing silks, rayons and cottons. The use of silicates in washing out the soluble leuco bases formed in discharge printing also decreases the fabric's tendency to become yellow with age.

Replacing ¼ to ½ of the sodium hydroxide used in the kier boiling of cotton with sodium metasilicate gives improved whiteness before and after bleaching, better removal of motes, non-cellulose constituents and dirt, as well as preventing iron stains and deposition or redeposition of dirt. The sesquisilicate and the purified 2.5 ratio silicate can also be used; the amount of soluble silica should be between 10 and 20% of the total solids in the kier boiling solution for best results. Tests on broadcloth showed that replacing 1/3 of the sodium hydroxide with metasilicate pentahydrate increased the whiteness before bleaching from 71 to 79% and from 81.5 to 84% after bleaching. In a test on knitted underwear a 4% increase in whiteness was obtained when ½ of the sodium hydroxide was replaced with metasilicate even though the total alkali concentration was slightly less. This improved whiteness is due to better removal of dirt rather than deposition of silica in the fabric. Tests have shown that the cloth scoured with reasonably pure silicates by accepted techniques has a lower silica content than the original material before kier boiling. In other mill tests replacing 1/3 of the caustic with metasilicate gave 4 to 7% better whiteness with better "feel" of the fabric. The lower alkalinity decreases the danger of weakening fabric or of excess shrinking. In some cases the fabric after kier boiling in metasilicate-caustic soda mixtures is dyed without bleaching.

Box scouring of rayons is being done with a solution containing about 20 lbs. sodium metasilicate pentahydrate and 10 lbs. low titer soap per 1,000 gallons of water. In a typical formula for jig scouring of rayons four times as much detergent is used. Tetrasodium pyrophosphate and polyphosphates are also added, particularly in hard water. Synthetic detergents such as the alkylarylsulfonates may be used to replace the soap. Continuous scouring operations are charged with the same amount of silicate and soap as box scouring but additions of both detergents are made so that the total alkalinity is always greater than 0.04% Na_2O. The pH for acetate rayons is maintained above 10.2, usually around 10.8. With regenerated or viscose cellulose rayons a pH somewhat above 11 is safe in the presence of colloidal silica, is economical, and gives rapid scouring. Acetate rayons have been safely scoured for not more than 30 minutes with up to 20 lbs. of sodium metasilicate pentahydrate and 10 lbs. of low titre soap yer 1,000 gallons of water at 140°F. Nylons are also scoured with mixtures containing metasilicate and other silicates.

Wool scouring over a period of more than ten years with a mixture of soda ash and a 2.0 ratio sodium silicate has shown

TABLE I
Commercial Sodium Silicates of Interest in the Textile Industry

NAME	FORMULA	SiO_2/Na_2O WT. RATIO	$\%Na_2O$	$\%SiO_2$	GRAVITY SP.GR.20/20	°Bé	APPROX. VISCOSITY POISES 20°C.
Sodium Sesquisilicate	$Na_3HSiO_4 \cdot 5H_2O$ or $3Na_2O \cdot 2SiO_2 \cdot 11H_2O$	0.69	36.6	24.4	..	..	..
Sodium Metasilicate Pentahydrate	$Na_2SiO_3 \cdot 5H_2O$	0.97	29.2	28.3	..	..	..
BW	$Na_2O \cdot 1.7\ SiO_2$	1.60	19.5	31.2	1.68	58.5	70
C	$Na_2O \cdot 2.1\ SiO_2$	2.00	18.0	36.0	1.69	59.3	700
Star*	$Na_2O \cdot 2.6\ SiO_2$	2.50	10.5	26.3	1.41	42.0	0.5
N	$Na_2O \cdot 3.3\ SiO_2$	3.22	8.9	28.7	1.39	41.0	1.8
E**	$Na\ O \cdot 3.3\ SiO_2$	3.22	8.6	27.7	1.38	40.0	1.0
S Special	$Na_2O \cdot 3.8\ SiO_2$	3.75	6.7	25.3	1.32	35.0	2.2

* Specially purified clear stable silicate.
** Clarified Silicate.

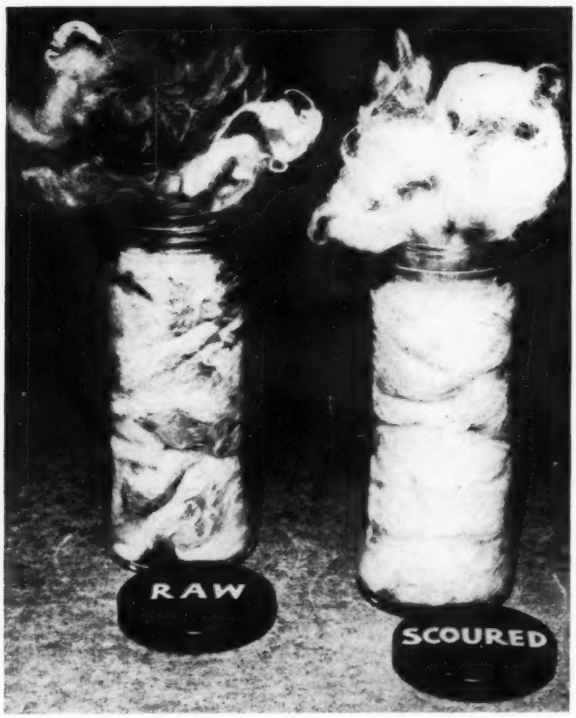

Figure 1
Wool Scouring with Silicates
Left—Raw Wool
Right—Same Wool Scoured in Silicate

that cleaner wool which dyes more evenly is produced at lower cost than with the soda ash alone and with less soap. More recently the 2.0 and 1.6 ratio silicate solutions have been used without soda ash. Suitable conditions are a pH of 10.8 at 130°F. The metasilicate has also been used but this requires careful control to prevent yellowing of the fiber ends and damage to the fiber so that it is not generally recommended. Plant tests have shown that mixtures of an alkylarylsulfonate detergent with a 1.6 or 2.0 ratio sodium silicate gave good scouring of a raw wool whereas a mixture of the same synthetic detergent with soda ash gave unsatisfactory results. Finished wool and worsted yarns are being cleaned with sodium metasilicate plus a synthetic detergent and with mixtures of 1/3 metasilicate, 2/3 soda ash and turkey red oil.

Degumming

The degumming of raw silk is carried out with mixtures of a neutral olive oil or similar soap, the more alkaline silicates and sometimes other ingredients such as tetrasodium pyrophosphate. According to a patent *(33)*, cellulose esters may be used to modify the action of the most alkaline mixtures on silk. A process for degumming silk in the presence of Celanese involves impregnating the material with a strong aqueous solution of turkey red oil containing 1 to 3% sodium silicate (presumably 2.5 ratio) at 75°C, and thus squeezing the material until it contains about its own weight of solution. The wet material is allowed to lay for 6 to 12 hours, then scoured twice at 75°C. with a 0.25% sodium carbonate solution, and rinsed well with hot water *(60)*. The 3.93 ratio silicate degums silk more rapidly than trisodium phosphate, borax, or sodium bicarbonate on an alkali equivalent basis but more slowly than soda ash or caustic soda *(95)*. The more alkaline ratio silicates recommended and most commonly used for this purpose were apparently not studied. Degradation of silk sericin in the presence of various alkalies and the combination of sericin with them have been studied *(89)*. Morgan and Seyferth *(58)* found that for degumming silk a combination of one of the organic wetting agents with silicates was preferable to soap alone or soap in combination with other alkalies because the finished product is most stisfactory, particularly with respect to retaining pliability and elasticity.

Laboratory studies have shown that ramie fiber is satisfactorily "degummed" with sodium sesquisilicate, sometimes with the addition of a small amount of wetting agent. Vegetable fibers dewaxed with sodium metasilicate and then bleached with sodium hypochlorite are claimed to have a higher tensile strength and higher ash content than when dewaxed with caustic soda or soda ash *(2)*. Several patents claim that hemp, musa or other vegetable fibers can be disintegrated and purified by treatment with a hot alkaline silicate solution and a softening material, and then bleached to form a cellulose of sufficient purity for rayon manufacture *(21, 83, 97, 98)*. This treatment removes intercellular cementing products with minimum degradation and oxycellulose formation. Boiling crude bast fibers from linden, lime or willow trees in an alkaline silicate solution is supposed to remove the useless outer layers leaving a useful textile filament *(48, 88)*.

Investigations on the effect of various silicates on different fabrics as summarized by Vail *(86)*, show clearly that they vary widely with the silica to alkali ratio. By means of chemical analysis of the solutions, physical tests on the fibers, and microscopic examination of the fibers, Schaeffer *(79)* has more recently studied the extent of damage of raw cotton fiber and three commercial types of regenerated cellulose fibers after repeated boilings in various alkalies. Damage to the fiber tended to decrease in the following order for alkalies at equivalent concentrations: sodium hydroxide, sodium metasilicate, sodium "disilicate", sodium "trisilicate", and a commercial "waterglass" with a silica to alkali (Na_2O) ratio of 3.3. Degradation of cellulose is considerably inhibited by the addition of small amounts of magnesium silicate. Deposition of a siliceous material in the fibers occurred in solutions of the 3.0 and 3.3 ratio silicates, probably due to impurities in the commercial silicates he used which were manufactured in Germany and are less pure than those made in the U. S. Sodium metasilicate prevents precipitation of this siliceous material in the fibers.

Bleaching

Silicates of soda are used both in hypochlorite and peroxide bleaching because they stabilize and control the rate of decomposition of the bleaching agent both in the presence and absence of bleachable material, buffer the alkalinity at any point desired between 9.5 and 14, are good detergents, and protect the bleaching agent from otherwise harmful catalysts. Twenty-five years ago Weber *(90)* showed that little or no decomposition of peroxide occurred in the presence of silicates whereas in the presence of ammonia and other alkalies considerable loss of peroxide occurred. The formation of an addition compound may be involved in the stabilization of hydrogen peroxide with silicates since a stable compound of this type can be prepared. Recent data show that whereas 1 volume hydrogen peroxide at

a pH of 10.0 and a temperature of 180°F. is 50% decomposed in about 15 minutes, the addition of 7.2 grams of a purified silicate at the same pH stabilizes the solution so that about 3 hours are required to reach 50% decomposition *(73)*.

In bleaching operations it is essential that a highly purified silicate be used, because impurities tend to "break" or precipitate when a silicate is diluted and heated, and because small traces of some impurities, particularly heavy metals such as iron, titanium, and copper, catalyze decomposition of peroxides. For example at a pH of 7.0 and a temperature of 90°C, a 1 volume solution of hydrogen peroxide is 50% decomposed in 3 hours. In the presence of 1.0 ppm manganese 50% decomposition occurs in 1.2 hours. With 0.1 ppm copper 50% decomposition is reached in 0.2 hour and with 10 ppm of iron in 0.125 hour. At higher pH's decomposition is more rapid *(73)*. Schumb and coworkers have recently shown *(79A)* that mixtures of metal catalysts decompose peroxide more rapidly than would be expected from their effect individually. The silicate of soda most generally used in peroxide bleaching has a ratio of 2.5, is low in titania and averages 0.01% or less iron oxide. Complete freedom from iron and other heavy metals is not desired since apparently an iron content of this order of magnitude produces an optimum rate of bleaching. The use of impure silicates accounts for the erroneous statements in some of the early and current foreign published literature that silicates cannot be used in peroxide bleaching.

Another reason for using silicates with peroxide and chlorine is to decrease the loss in strength of the fabric. Table II gives the per cent loss in breaking strength of cloth after 50 bleaches with 2 quarts of hydrogen peroxide (1% available oxygen) per 100 pounds of cloth at a temperature of 160°F. and pH's between 9.8 and 10.1 except where otherwise noted *(65)*.

TABLE II
Loss in Breaking Strength of Cloth After Peroxide Bleaching *(65)*

Alkali	*% Loss in Breaking Strength* Dry	Wet
Na_2SiO_3	3	12
Na_3PO_4	5.5	16
NaOH	7.5	24
$NaOH + Na_2CO_3$	8	28
$Na_2SiO_3 + Na_2CO_3$	11	14
Modified Soda (ph = 7.6)	12	26

The metasilicate gave lower tensile loss than the other alkalies studied in peroxide bleaching. However, metasilicates are not used in peroxide bleaching because they are not as effective as the more colloidal silicates.

The type of alkali also has a definite effect on fabric breaking strength after bleaching with hypochlorite. Under uniform conditions of bleaching, i.e., at the same bleach concentration, temperature and pH, lower tensile losses were observed with bleaching baths containing sodium hydroxide, trisodium phosphate, and sodium metasilicate than with those containing sodium carbonate or bicarbonate *(65)*. The addition of silicate to the viscose bleaching bath increases the wet strength of the fibers formed from it *(40, 54)*. At the same temperature and identical working conditions the peroxide bleaching bath containing silicates produced distinctly less damage to a viscose fiber than one containing sodium or potassium hydroxide or ammonia *(64)*.

Carter's data *(19)* on the use of silicates in chlorine bleaching shows that, although they have little effect on the decomposition of a hypochlorite solution by itself, the addition of silicates conserves bleaching strength in the presence of bleachable material. The addition of silicates in the bleaching of cotton cheesecloth gave improved whiteness or reduced the amount of chlorine needed to produce a given whiteness, and gave a stronger fabric than those bleached in chlorine alone.

Bleaching formulae vary widely depending on the type of cloth, amount and nature of dirt etc. but the typical formulae in Table III using peroxide give an indication of the use of silicates for this purpose and illustrate the variety of fabrics bleached. When bleaching silk or wool sufficient silicate should be used so that the bath always has a pH above 10.0.

The continuous peroxide bleaching systems developed and rather widely used during the past five or ten years have all utilized silicates. These systems which bleach at rates up to 250 feet per minute have shown the necessity of using a purified silicate to prevent buildup of precipitates on the walls of the heated J-shaped boxes where the scouring and bleaching is done or on the cloth, as well as to prevent decomposition of the expensive peroxide. The continuous systems in use differ but the following steps and operations are typical. The woven cloth is first saturated with a scouring solution containing 2.5 to 3.5% sodium hydroxide and 0.5 to 1% of a 2.5 ratio silicate to remove non-cellulosic materials. After passing through a steam-heated J-shaped box with a retention time of 1 to 1.5 hours, the caustic scouring solution and impurities are removed by washing. The cloth then passes through a squeezer or wringer to a saturator where it is soaked in the bleaching solution. When bleaching light fabrics, this solution contains 0.9 to 2.0% of a purified 2.5 ratio 42° Baumé sodium silicate, 0.6 to 1.2% of 100 volume hydrogen peroxide and 0.1 to 0.25% sodium hydroxide, depending upon the type of cloth. For heavy fabrics the concentration of both silicate and peroxide may be as high as 6 to 8%. Usually 1¼ to 1½ times as much silicate

TABLE III. TYPICAL BLEACHING FORMULAE
Chemicals per 1000 Gallons Water

Textile	*(a)* *Peroxide*	*(b)* *Silicate*	*Sodium Hydroxide*	*Others*	*Ref.*
white cotton	54 lbs. H_2O_2	54 lbs.	15 lbs. 25% NaOH	3.3 lbs. red oil soap	....
white cotton	40 lbs. H_2O_2	46 lbs.	6.6 lbs. 50% NaOH	8 lbs. sulfonated oil 0.2 lbs. $MgSO_4$	....
Cotton hosiery (c)(d)	2.35 lbs. Na_2O_2	2.5 lbs.	....	2.6 lbs. 66° H_2SO_4	43
chenille yarn(e)	6.9 lbs. H_2O_2	5 lbs.	....	....	....
silk(f)	9.2 lbs. H_2O_2	6 lbs.	....	....	5
silk(g)	7 to 9 lbs. H_2O_2	.6 lbs.	....	6 lbs. soap	5
silk or rayon hosiery	9 lbs. 11 oz. H_2O_2	8. lbs.	....	¼ lb. sulfonated castor oil	
wool yarn	4.6 lbs. H_2O_2	2-3 lbs.	....	....	57, 90

(a) The hydrogen peroxide weights are for the 100 volume solution which weighs 9.2 lbs. per gallon.
(b) In all cases the specially purified 42°, 2.5 ratio silicate is recommended.
(c) Order of addition of chemicals should be first Na_2O_2, then H_2SO_4 and last the silicate with good mixing between addition of each.
(d) Amounts of chemicals used per 27 dozen pair.
(e) At temperatures from 120 to 190°F. for 3 hours.
(f) Using reel machine. Immersed for 4 hours at 165°F. For bleaching silk on jigs the peroxide concentration is doubled or tripled.
(g) Using rotary or paddle machines. Immersed for 1 hour at 195°F.

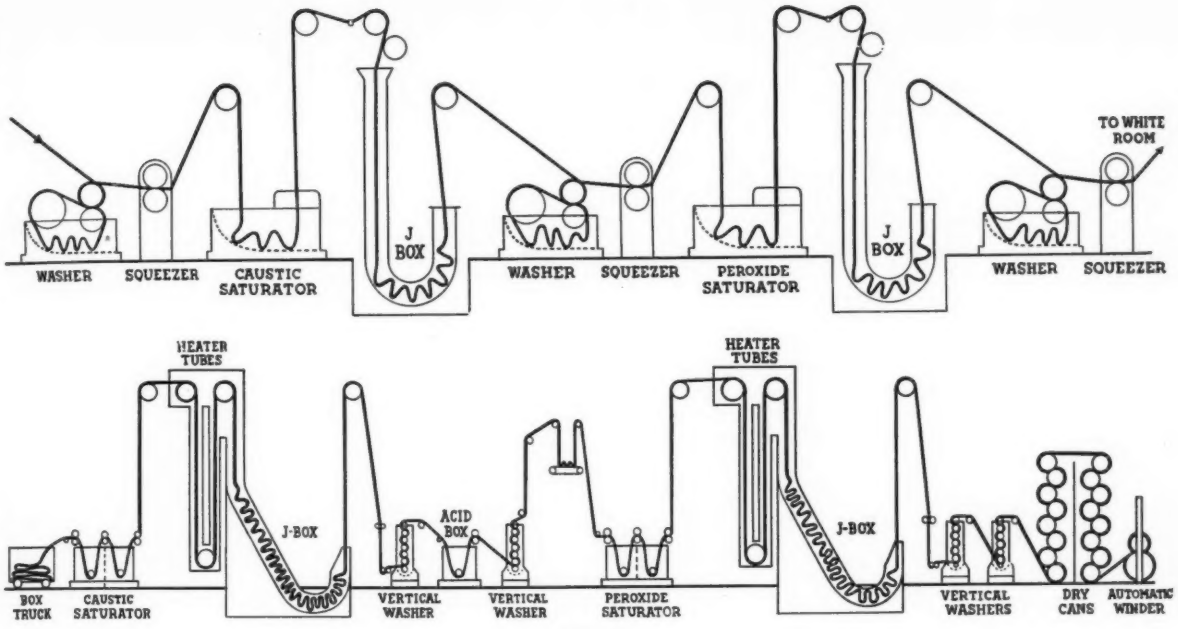

Figure 2
Typical Continuous Bleaching Systems

as peroxide is used. The cloth passes next into a second steam-heated J-shaped box with a retention time of 1 to 1.5 hours. The fabric is then rinsed.

The importance of using the proper type of silicate in peroxide bleaching is emphasized by data from DuBose *(32)*. Using ordinary "commercial" silicate, a cloth originally containing 0.15% ash had an ash content of 0.22% after bleaching and rinsing *(32)*. This work was done with a silicate which was less alkaline and less thoroughly purified than would be recommended. When a specially purified silicate is used in the bleach followed by good rinsing with warm or hot water the ash content after the bleaching process is about the same as or even less than that of the original fabric. Bandage cloth is bleached continuously with a peroxide-silicate mixture and the final product has an ash content of less than 0.1%. Even when there is no increase in the ash content, a small amount of silica is not ordinarily objectionable since it occurs in an amorphous or colloidal form which does not injure the fabric and may in fact increase its strength *(19)*.

A recent process for bleaching cellulose fabrics involves soaking the fabric in a hot alkaline solution containing 0.5 to 4.0% sodium silicate at a pH of 9.5 to 12 and subsequently steaming the wet cloth while adding small amounts of sodium chlorite *(87)*.

Weighting

During the 1920's and 1930,'s large amounts of silicate were used in "weighting" silk in order to improve its "feel", and draping qualities and to give the cloth crackle or scroop. Light weighting on hosiery and other silks subject to abrasion gives increased wear. Since silk has not been available, the use of this process has greatly diminished but it may again be important or be used with other types of fabrics.

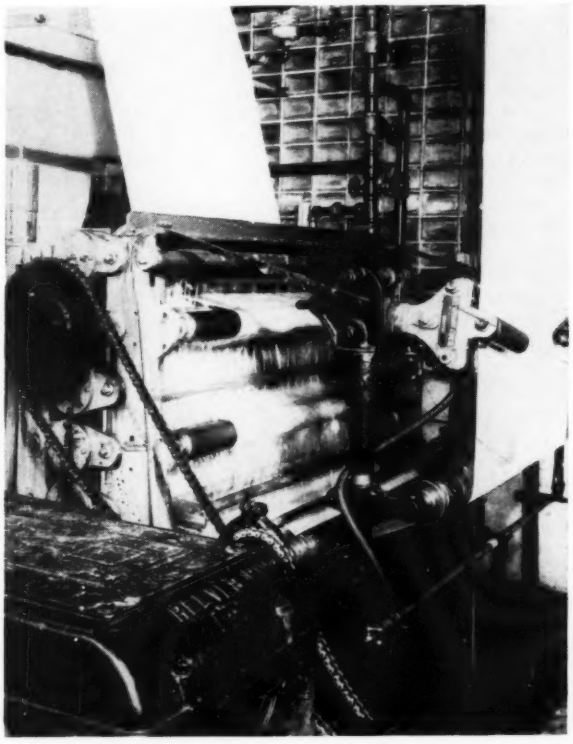

Figure 3
Washer Used in Continuous Bleaching Systems

The weighting process as most commonly carried out involved immersing the degummed silk skeins or fabric for one hour at room temperature in a 28 to 30° Baumé solution of tin tetrachloride containing a small amount of hydrochloric acid to prevent hydrolysis. Excess solution was removed from the silk by centrifuging and rinsing. It was then soaked in a 8° Baumé disodium phosphate for an hour followed by rinsing. Immersion in the tin and phosphate baths was repeated or the silk fabric was then worked in a 0.5 to 1.5° Baumé solution of the 2.5 ratio sodium silicate at 110 to 140°F. for one-half hour. When skeins of silk were weighted the silicate bath was more concentrated, from 3 to 5° Baumé. Excess silicate was finally removed by washing. The amount of silicate taken up depended on the amount of tin and phosphate previously absorbed.

Frequently the silica was about 20% of the total weighting. The silica treatment increased the strength of the weighted fabric *(38a)*. The extent of weighting was largely determined by the type of material and intended use but frequently the inorganic weighting material was 50% or more of the total weight of the degummed fiber. The earliest weighting processes used only tin salts and phosphates. J. H. Neuhaus *(63)* showed many years ago that silicates give additional weighting without injuring gloss or feel. Silk weighting apparently involves a preferential sorption of hydrous stannic oxides and their reaction with phosphates and silicates. Although the weighting material is frequently referred to as tin silicophosphate, it is probably not a stoichiometric chemical compound. The isoelectric point of weighted silk is 4.1 as compared with 5.1 for raw Japanese silk *(3)*. This suggests that combination with basic groups of the silk protein occurs.

Although tin salts were most widely used in silk weighting, salts of lead *(77)* and zinc *(12)* were also employed and the use of salts of antimony *(35)*, aluminum *(50)*, calcium *(14)* and bismuth has been suggested. Fabrics weighted with lead salts are dangerous to health if worn next to the skin. Weighting of dark fabrics has been carried out to some extent with iron salts. Fabrics may also be weighted with metal salts and silicates only. One process *(60)* involved a treatment with 20° Baumé tin bichloride solution, subsequently rinsing and further treating with a 2° Baumé 2.5 ratio silicate solution. The procedure is repeated at 40°C. and after thorough washing the fabric is ready for dyeing. The use of a single weighting bath containing a substance to retard precipitation has been patented *(20)* but apparently this was not widely used. An example included a bath of tin tetrachloride, formic acid, a sodium silicate, phosphoric acid, and glue.

The weighting of viscose rayon by the process used for silk has been reported to give difficulty due to the low tensile strength of the wet yarn after repeated passes through the solutions *(4)* but with modern rayon yarns this is not a problem. Cellulose acetate yarn can be weighed by soaking 1 part of yarn in 30 parts 24° Baumé stannic chloride at 40-50°C. for ½ hour. The yarn is then rinsed and placed in a 5° Baumé disodium phosphate solution for approximately the same time. After rinsing, it is finally soaked in a 5° Baumé silicate solution and thoroughly washed *(53)*. The presence of zinc salts is reported to make possible the use of a lower temperature *(34)*. Cellulose acetates may also be weighted with aluminum salts and silicates *(49)*. Rayons can be weighted with solutions of aluminum nitrate and soap followed by a treatment with a sodium silicate to increase their weight and fire resistance *(8)*. Dreyfus claims that weighting cellulose acetate rayons by means of tin tetrachloride and sodium silicate baths before or after partial saponification improves their resistance to hot ironing *(26, 27)*. The weighting of other types of fabrics such as cotton should give interesting results.

Sizing and Coatings

Although the amount of silicate now being used in textile sizings and coatings is not large, the applications are interesting and sufficiently promising to merit more investigation. As early as 1866 Taylor patented the use of sodium silicates and their reaction products with zinc oxide and magnesium carbonate to give firmness, durability, stiffness and water proofness to textiles *(84)*. A composition of starch, Irish moss, gum tragacanth, clay, and a soluble silicate was later proposed as a textile sizing *(44)*. British patents cover sizing compositions of gum tragacanth and sodium silicate *(69)*, and a paste of equal parts sodium silicate, aluminum sulfate, china clay and gelatin in 3 parts of water *(70)*. For sizing cotton warp an aqueous solution of sodium silicate with a silica to alkali (Na_2O) ratio of 1.6 to 2.0 and containing a soap, paraffin or similar material is said to give a fabric which is 20 to 30% stronger and more resistant to abrasion *(80)*. Recent plant trials have indicated that sodium silicate-vegetable gum mixtures have considerable promise as sizings for cotton.

In order to improve dyeing and prevent rotting of the fabric, sacks to be used for holding fertilizers can be immersed in a hot solution of a copper salt such as copper sulfate and a basic dye such as Brilliant Green Crystals Y and afterwards treated in a bath containing a sodium silicate and sodium stearate *(23)*. A simpler treatment to avoid rotting of jute sacks containing acid fertilizers involves soaking the sack in a solution of $Na_2O.3.3SiO_2$ (sp. gravity originally 1.4) which has been diluted with 9 volumes of water. The sack increases in weight 50%. A protective coating on jute or Hessian fibers is produced by treating under reduced pressure with a mixture of silicate and starch or latex and a plasticizer such as glycerol, sodium alginate or soaps and then increasing the pressure. The latex may include sulfur or a sulfur compound and accelerator for later vulcanization *(38)*. According to a Japanese patent, the dyeing properties of cotton thread are improved by immersion in a colloidal solution of fat-free soybean meal, lime, sodium silicate, Turkey Red Oil, and water with subsequent drying *(62)*. Treatment of cotton fibers, such as those used in tire cords, with a dilute solution of silicate and rosin is claimed to result in an increase in strength of 10 to 15% and more *(17)*. Ordinary wetting agents have little or no effect.

Pomphrey states *(68)* that cellulosic fabrics such as rayon can be made crease resistant by freeing them from sizing materials and impregnating with a 5 to 10% solution of a sodium silicate containing 0.5 to 1% glycerol, squeezing, drying in hot air, and then passing over heated rollers or plates at 100-150°C. *(68)*. Worall claims *(96)* that various types of cloth may be waterproofed by coating with a mixture containing rubber latex and sodium silicate, drying, and then treating with acid to make the silicate insoluble *(96)*. A recent patent claims the use of a mixture of an alkali such as ammonia, a natural resin, and a sodium silicate as a coating for Celanese fabrics to impart a smooth hand and prevent slipping of weave and stitch distortion *(66)*. A generation ago light rigid surgical bandages were made by saturating a fabric with a siliceous silicate, preferably $Na_2O.3.3SiO_2$, diluted just enough to penetrate, and binding it on over a cotton dressing. They dry in a few hours to a greater strength than gypsum plaster and are less bulky.

Dyeing and Printing

Solutions of the siliceous silicates are effective fixing agents for iron and chromium salt mordants. Colloidal silica produced by impregnating goods with a sodium silicate solution and then passing through a weak acid bath serves as a mordant for dyes such as aniline green *(50, 74)*.

Dilute silicate baths protect cotton dyed with sulfur colors which sometimes develop enough acidity to cause hydrolysis and weakening. Siliceous silicates also are supposed to improve the fastness of dyes on cellulose acetates *(15)* and other materials. It was reported many years ago that dipping printed calico in a dilute

solution of a siliceous silicate produced a glossy coat which made oolors more stable to light, acids and washing *(7)* but only on extremely light coating could be at all satisfactory. Starch-silicate sizing mixtures for cotton goods give dyes better penetration and levelness and fastness to light and air *(85)*. Amounts of silicate as low as 2.5 to 3% are sufficient. Alkaline silicates such as the meta- or sesquisilicate do not have this protective action although they are more efficient dispersing agents than the alkali carbonates commonly used. Dyes whose fastness is increased by silicates include Benzo Brown D3G, Benzopurpurin 4B and 10B, various aniline and alizarin dyes and low cost direct cotton dyes ordinarily regarded as very sensitive to light.

The dispersing and alkaline buffering properties of the various silicates, particularly the more alkaline products, may be used in the preparation of dye baths (e.g. 36, 93). Dry compositions which when added to water produce vat dyeing baths include dry vat dyes, an alkali hydrosulfite, and a crystalline meta- or sesquisilicate *(59)*. Weighted silk may be dyed by impregnating it with an azo compound having a substantive character and developing the dye with a diazo solution containing a soluble silicate. The silicate keeps the impregnating bath clear and produces a uniformly dyed fabric. The use of sodium hydroxide removes weighting material from the fiber, produces a turbid bath, and precipitates some of the dyes used *(51)*. Azo dyes can be produced on animal fibers by using a hydroxy compound capable of coupling and a sodium silicate *(46)*. Silicates are used for alkalinity control in the continuous indigo dyeing of wool. *(92)*.

Concentrated, viscous, alkaline silicate solutions serve as media for suspending pigments and dyes in printing pastes (e.g. *99*). Metallic hydroxides can be used, if desired to decrease their alkalinity *(42)*. The addition of silicates to a printing paste increases the amount of moisture it absorbs during the steaming process *(41)*.

The abilities of silicates to give buffered alkalinities at the desired pH, and to disperse solids, leads to their use in processes for saponifying and dyeing cellulose acetates and similar materials (e.g. *30, 75*). Differences in the ability of various lots of viscose rayon yarns to take up dyes may be almost completely corrected by adding to the dye liquor sufficient sodium silicate (probably $Na_2O.2.5SiO_2$) to give a 40% solution; a 10% solution gives great improvement, and when added after 15 minutes of dyeing gives almost complete correction *(94)*. Acetate rayons by themselves or mixed with other fibers may be saponified and dyed in a single bath *(81)*. Five to 11.5 lbs. of $Na_3HSiO_4.5H_2O$ (hydrated sodium sesquisilicate) are added per 1000 gallons of water and the temperature gradually raised to 175°F. The bath is held at this temperature until the fabric reaches the desired shade. One pound of salt per 100 gallons of water is then added and the temperature decreased. The pH of the bath should be somewhat above 11.2; the active alkali is preferably less than 0.1% Na_2O and must be less than 0.15%.

Fireproofing

As early as 1820, Von Fuchs used sodium silicates to coat theatrical scenery in Munich (cf. *86* for early references). About 20% by weight of a sodium silicate is necessary to prevent flame propagation in a cotton fabric. Various mixtures with other materials have also been used. One treatment said to give reasonable permanency involves immersion of the fabric in successive baths of sodium stannate, a soluble titanium compound, and sodium silicate. Other methods involve silicate-asbestos mixtures, and soaking the fabric in 2% aluminum sulfate followed by treatment in 5% silicate. Rayons may be made non-inflammable by soaking or padding with a mixture of calcium phosphate, dextrin, borax and sodium silicate but the method is reported as not suitable for colored goods. A recent patent *(10)* covers flameproofing a fabric base material of cellulose origin with a solid vitreous silicate which fuses at the combustion temperature of the base material. A composition for making cotton uninflammable is made by mixing 180 parts dry powdered soap, 24 parts sodium silicate, 8 parts potassium carbonate, 9 parts glycerine and 4 parts sodium tungstate *(6)*. One company treats canvas leggings worn by moulders for leg protection when carrying ladles of molten iron, with a 22° Baumé 3.2 ratio silicate. The stiffness and harshness of the leggings after treatment is removed by brushing with stiff brushes. Burlap is made fire and rot resistant by immersion in a bath containing 2.5 lbs. calcium sulfate pentahydrate, 2 lbs. sugar, 1 lb. sodium hydroxide, 54 lbs. H_2O, 4.5 lbs. 26° Baumé aqueous ammonia, and 50 lbs. 41° Baumé 3.3 ratio sodium silicate.

Rayon Applications

Various sodium silicates can be used in the rayon industry for several special applications. The addition of one part sodium silicate to the desulfurizing bath for viscose rayons decreases the amount of alkali needed for 10 to 6 parts; the bath life is longer and the sulfur has less tendency to precipitate on the goods *(40, 54)*. An alkaline silicate, such as the sesquisilicates, may be used with the sodium sulfide. One company uses 0.12% of a 2.4 ratio silicate and 0.25% sodium sulfide as a desulfurizing bath. The tendency of viscose rayon threads to stick together after coagulation in an acid bath is decreased by passing them through a silicate bath (cf. ref. *86*, p. 409). Viscose can be coagulated by projecting it into a solution of a siliceous silicate. A solution containing 20% by weight of a solution of $Na_2O.3.5SiO_2$ at a temperature of 40° to 50° has been used. After further fixation (e.g. with 1% H_2SO_4) and desired subsequent treatment this method "results in lustrous threads, filaments and the like of excellent quality" *(24)*. Fibers from cuprammonium cellulose spinning solutions may also be made by spinning into a solution containing 0.003 to 0.05% sodium silicate *(45)*.

The addition of silicates to a viscose or casein solution is claimed to impart the rough feel of natural wool to the fibers produced from it *(22, 37)*. Mixtures of silicates with sulfur, sodium aluminate, or sodium resinate have also been suggested for this purpose. The addition of 25% silicate to a viscose solution has little effect on the luster of the threads but does decrease their strength somewhat *(47)*. Rayon fibers or fabrics as well as silks can be delustered by treatment with silicates and a titanium or aluminum salt *(29, 49)* or with sodium stannate and sodium silicate *(18)*.

The cutting of pile fabrics of cellulose acetate, such as the "transparent velvets", is facilitated by treatment with a dilute alkaline silicate solution containing a wetting agent or soap to act as a lubricant, according to a British patent *(25)*.

Silica Soils and Gels

The use of silica gels in the textile industry was mentioned as early as 1911 when treatment with sodium silicate followed by immersion in a dilute sulfuric acid bath was used for sizing yarn *(67)*. A British patent was granted in 1937 disclosing the treatment of fabrics with an alkaline silicate solution and then with acid to precipitate a finely dispersed silica gel on the fabric *(76)*. The fire resistance of fabrics is increased by impregnating them with silicate and subsequently treating with ammonium chloride, phosphate, or sulfate which precipitates a silica gel *(78)*. Colloidal silicas or silicates may also be formed in sodium silicate impregnated fabrics, such as cellulose acetates by reaction with a gaseous acid such as hydrochloric acid vapor, or by immersion in a bath containing a heavy metal salt and weak acid *(31)*. Cellulose acetate fabrics containing 3 to 20% silica gel can be dyed with dyestuffs which have no affinity for the cellulose acetate itself *(28)*. A hard silica gel with rough edges may be used as an abrasive for roughening rayon fibers *(1)*. The use of a colloidal sol consisting of a partial alkyl ester of a polysilicic acid as a means of increasing the

heat and solvent resistance of cellulose ester fabrics has been patented *(39)*.

Recently there has been considerable interest in the textile uses of a silica sol, commercially available under the trade name Syton. It is claimed that the use of this material in amounts of 5 to 10% reduces slippage in nylon, rayon, silk and glass fabrics or any satin weave cloth and reduces luster of fabrics such as rayon and glass. Concentrations of 1% or more are stated to increase the body weight of light goods and impart a dry, smooth, crisp finish and a stronger more flexible fiber and fabric *(11, 71, 72)*. In one study, treatment of cotton sliver with this colloidal silica sol resulted in obtaining higher strength yarns at lower twists and a higher maximum strength *(61)*. Increases in strength of as much as 20 to 50% were observed. Although the increase in strength of the silica sol treated cotton was not so great after weaving, and some strength was lost on washing, the strength of the washed fabric was still higher than that of similar but untreated cotton without the silica sol treatment. Tests on cotton fabrics used in bags, tire cords, and ropes indicated that these were stronger when made from cotton treated with the colloidal silica sol. Yarn slippage was lessened and the absorption of water increased.

Brown *(16)* reports laboratory and mill tests indicating that stronger, loftier, more uniform woolen and worsted yarns could be produced at a faster rate by treating with colloidal silica. The silica sol was added in amounts of 0.5 to 3.0% by mixing with an oil emulsion. Worsted material treated with the silica showed a 6 to 43% increase in strength after weaving but this was lost when the material was washed.

Miscellaneous Uses

It has been suggested *(9)* that wool can be cheaply and effectively preshrunk by immersing the skeins in a hot bath containing soap and silicate, and controlling the tension on the skeins so that the proper degree of shrinkage is obtained. A patent *(13)* includes sodium silicates in a list of materials used in treating wool to prevent shrinking. The tensile strength of cotton tire cords and yarns is reportedly increased by soaking them in a solution with a pH between 8 and 13 of sodium silicates and some other alkalies. Cotton cords wet twisted from solutions containing 1% sodium silicate are claimed to double in fatigue resistance *(52)*.

An important established use for silicates is in protective coatings on kiers and pipes for conveying peroxide. Frequently the silicate is merely painted on the kier and the coating renewed after each boil. Permanent coatings are obtained by adding Portland cement to a kier freshly painted with silicate, either by dusting it on or in the form of a 25% slurry. Another method is to paint the kier with silicate and, about an hour later, to fill it with a 10% magnesium sulfate solution and heat to boiling.

Other applications of the various sodium silicates in the textile industry include their use as adhesives, to harden concrete, prevent corrosion *(82)* and, in the form of activated silica sols, help obtain a better quality water at lower cost *(56)*. Much remains to be learned about the uses of silicates of soda in the textile industry. Some of the established uses are still on an empirical basis. Other applications, such as for sizings and coatings, need further research before they can be regarded as generally applicable. However their versatility, low cost and numerous established uses makes it likely that further research and development work on silicates of soda in the textile industry will be both interesting and profitable.

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Literature Cited

1. Aberrheincsche Handelsge British Patent 266,367 (Feb. 17, 1926).
2. Airoldi, Alberti, Tinctoria, *33*, 221, 269 (1939); C. A. *34*, 7612.
3. Anon., Am. Dyestuff Rept., *16*, No. 13, 511 (1927).
4. Anon., Am. Silk and Rayon J., *11*, No. 8, 32 (1932).
5. Anon., Am. Silk ad Rayon J., *51*, No. 1, 59 (1932).
6. Anon., Chem. Industries, *44*, 293 (March 1939).
7. Anon., J. Soc. Chem. Ind., *1*, 279 (1882).
8. Anon., Textile Colorists, p. 363 (July 1942).
9. Anon., Textile World, p. 2220 (Nov. 1934).
10. Athz, L. C. and Stufft, B. C., U. S. Patent 2,420,644 (May 20, 1947).
11. Barrett, J. W. and Nickerson, R. N., XIth International Congress of Pure and Applied Chem. 1947, Authors Summary 119/10 1 p.
12. Berg, O., Imhoff, M. and Heiberg, O. E., U. S. Patent 1,990,450 (Feb. 2, 1935).
13. Bleachers Assoc. Ltd., British Patent, 546,-529 (July 17, 1942).
14. Bolduirev, A. L. and Tyulenev, N. V. Russian Patent 34,517 (Feb. 28, 1934); C. A. *29*, 3176.
15. British Celanese Ltd., British Patent 539,-486 (Sept. 12, 1941).
16. Brown, R. L., Textile World, *98*, No. 8, 123 (1948).
17. Buckwalter, H. M., U. S. Patent 2,279,536 (Sept. 29, 1942).
18. Calico Printers Assoc. Ltd. and J. R. Whinfield, British Patent 455,209 (Oct. 15, 1936).
19. Carter, J. D., Ind. Eng. Chem., *18*, 248 (1926).
20. Clavel, R., British Patent 206,640 (Sept. 17, 1926).
21. Coghill, R. D., U. S. Patent 1,825,178 (Sept. 29, 1931).
22. Compton des Textiles Artificiels Anon. and H. Ghavassieu. British Patent 268,734 (April 3, 1926).
23. Cotton, F. H. and Wakely Bros. Ltd., British Patent 345,468 (March 6, 1930).
24. Cross, C. F., U. S. Patent 1,538,689 (May 19, 1925).
25. Dickie, W. A. and Gentle, A. H., British Patent 390,540 (April 13, 1933).
26. Dreyfus, C. and Blume, W. R., U. S. Patent 1,818,466 (Aug. 11, 1931).
27. Dreyfus, C. and Platt, H., U. S. Patent 1,806,048 (May 19, 1931).
28. Dreyfus, C. and Whitehead, W., U. S. Patent 2,160,839 (June 6, 1939. cf. British Celanese Ltd., British Patent 474,489 (Nov. 9, 1937).
29. Dreyfus, H., French Patent 743,922 (April 8, 1933).
30. Dreyfus, H., U. S. Patent 2,116,063 (May 3, 1938).
31. Dreyfus, H. and Moncrieff, R. W., British Patents 443,725, and 443,726 (March 2, 1936).
32. DuBose, B. and Holland, V. B., Am. Dyestuff Rept., *36*, No. 9, 227 (May 5, 1947).
33. Ellis, G. H., U. S. Patent 1,882,070 (Oct. 11, 1932).
34. Ellis, G. H., and Olpin, H. C., U. S. Patent 1,905,453 (April 25, 1933).
35. Esselen, G. J. and Scott, W. M., U. S. Patent 2,034,696 (March 24, 1936).
36. Everett, A. E. and Wallwork, J. A., U. S. Patent 2,193,556 (March 12, 1940).
37. Ferretti, A., British Patent 483,731 (April 21, 1938); French Patent 813,427 (June 1, 1937); U. S. Patent 2,450,889 (Oct. 12, 1948).
38. Finlayson, P. and Gunn, W. W., British Patent 325,020 (Nov. 16, 1928).
38a. Forbes, W. M. and Mack, P. B., J. Home Ec. *21*, 841 (1929).
39. Fothergill, R. E., Hill, J. W. and Johnson, A. A., U. S. Patent 2,406,755 (Sept. 3, 1946).
40. Fryer, L. S., Schwartz, H. A. and Helm, E. B., U. S. Patent 2,265,033 (Dec. 2, 1941).
41. Gerber, H., and Grünn, P., Milliand Textilberich, *20*, 439 (1939).
42. Gossler, H., British Patent 514,023 (Oct. 27, 1939); German Patent 138,890 (July 29, 1943).
43. Hand, W. H., Textile World, p. 64 (April, 1933).
44. Hermann, S. M., U. S. Patent 997,294 (July 11, 1911).
45. Hoelkeskamp, F. and Knehe, E., U. S. Patent 2,295,844 (Sept. 15, 1942).
46. I. G. Farbenindustrie, French Patent 797,140 (April 21, 1936); British Patent 271,089 (May 11, 1926).
47. Iwasaki, S. and Masuda, S. Cellulose Ind. (Tokyo) *5*, 327 (1929); C. A. *24*, 5152.
48. Kalmanovich, F., and Kolotireva, A. F., Rayon Textile Monthly *17*, 391, 462, 529 (1936).
49. Kirk, E. W. and Ellis, G. H., British Patent 391.773 (Oct. 15, 1931).
50. Knecht, E., Rawson C. and Loewenthal, R., "Manual of Dyeing", Griffn & Co. Ltd., London 2nd. Ed. 1910, p. 239.
51. Konrad, R., U. S. Patent 1,723,183 (Aug. 6, 1929).
52. Lessig, E. T., and Larrick, L., U. S. Patent 2,346,126 (April 11, 1944).
53. Lipscomb, A. G., "Cellulose Acetate; Its Manufacture and Applications", London E. Benn, Ltd. 304 pp. (1933) p. 223.
54. Malafew, L. A., Gorodetskaya, L. A., and Gagarinskii, Yu. V., Tekh. Byull, GUIV. *1940*, No. 3, 59-62; Khim Referat Zhur *4*, No. 4, 127 (1941), C. A. *37*, 5862.
55. Merrill, R. C., J. Am. Oil Chem. Soc., *25*, 84 (1948).
56. Merrill, R. C., Ind. Eng. Chem. *40*, 1355 (1948).
57. Mills, R., Am. Dyestuff Rept. *35*, 16 (1946).
58. Morgan, O. M., and Seyferth, H., Am. Dyestuff Rept. *29*, 616 (1940).
59. Müller, J., German Patent 670,472 (Jan. 19, 1939).
60. Mullin, C. E., "Acetate Silk and Its Dyes" New York, Textile Colorist, Inc. 1927, p. 135.
61. Murray, E. A., Moore, J. W. and Williams, Simon. Textile Research J., *17*, 331 (1947). cf. also Williams, Simon and Murray, E. A., Final Report on WPB Contract 148 submitted to the Office of Prod. Research and Development, Industrial and Consumer Products Branch, War Production Board, Washington, D. C. by the Research Division, National Cotton Council of America, Austin, Texas, Dec. 21, 1945.
62. Nakajima, K. and Kamata, T., Japanese Patent 109,661 (Feb. 18, 1935).
63. Neuhaus, J. H., German Patent 75,896 (Jan. 25, 1893).
64. Ohl, F., Melliands Textile Ber. *15*, 555 (1934); Am. Dyestuff Rept. *25*, 170 (April 6, 1936).
65. Pennsylvania Laundry Owners Research Laboratory, communications to Dr. Wm. Stericker from P. B. Mack and J. F. Oesterling. cf. also Penna. Laundry Owners Assoc. Lab. Notes, 1935.
66. Platt, H., U. S. Patent 2,100,408 (Nov. 30, 1947).
67. Polleyn, F., Dressings and Finishings for Textile Fabrics and their Application, 3rd Ed. translated by C. Salter, Scott Greenwood and Son, London, 1911, p. 177.
68. Pomphrey, J., British Patent 457,659 (Nov. 30, 1936).
69. Poulson, A., British Patent 165,365 (Sept. 24, 1920).
70. Poulson, A., British Patent 169,103 (Sept. 24, 1920).
71. Power, D. H., Plastic (Chicago) *1*, No. 5, 19, 102 (1744); and bulletins from the Monsanto Chemical Co.
72. Power, D. H. and Harrison, W. M. Jr., U. S. Patent 2,443,512 (June 15, 1948).

73. Reichert, J. S., Campbell, D. J., and Mills, R. T., Paper Trade J., *118*, No. 5, 45 (1944).
74. Richardson, H. O., Dyer and Calico Printer, *59*, 150 (1928).
75. Richardson, L. G., British Patent 175,486 (Dec. 18, 1920).
76. Rodwell, A. G., Barber, S. G. and Flexatex Ltd., British Patent 462.230 (March 1, 1937).
77. Roetheli, B. E., U. S. Patent 2,010,324 (Aug. 6, 1935).
78. Sadov, F. I. and Stertov, P. V., Zu Rekonstruk-Aziyu Textil Prom. *11*, 39 (1932); Chemie Et. Industrie *28*, 668 (1932).
79. Schaeffer, A., "Action of Alkali Upon Cellulose", Hobart Publishing Co., Inc. Washington, 1948; translation of Official Quartermaster Military Planning Division Textile Service Report No. 33; 80749.
79a. Schumb, W. C. et_al. Ind Eng. Chem., *41*, 992 (1949).
80. Stepanov, A. S., Rybakova, V. M. and Kosoleva, V. V., USSR patent 65,921 (Feb. 28, 1946); C. A. *41*, 5320.
81. Stericker, W., private communication.
82. Stericker, Ind. Eng. Chem., *30*, 348 (1938); *37*, 316 (1945).
83. Tangerini, S., British Patent 487, 192 (June 16, 1938).
84. Taylor, A., U. S. Patent 52,906 (Feb. 27, 1866).
85. Toepfer, H., private communication.
86. Vail, J. G., "Soluble Silicates in Industry", A.C.S. Monograph 46, 1st Ed., New York, Chemical Catalog Co. (1928).
87. Vincent, G. P., Dubeau, A. L., and Synan, J. F., Canadian Patent 412,608 (May 18, 1943).
88. Waganoff, A., U. S. Patent 1,149,876 (Aug. 10, 1915).
89. Walters, R. H. and Hougen, O. A., Textile Research *5*, 92 (1934).
90. Weber, I. E., J. Soc. Dyers Colorists, *35*, 209 (1923).
91. Weber, I. E., J. Textile Inst. *24*, No. 8, pp. 178 (Aug., 1933); Chem. Industries 33, 321 (1933).
92. White, N. D., Rayon Textile Monthly *20*, 91, 96 (Sept. 1939).
93. Whittaker, F., Am. Dyestuff Rept. *12*, 13 (1923).
94. Wilcock, C. C., J. Soc. Dyers Colourists, *63*, 136 (1947); Am. Dyestuff Rept. *36*, 654, 671 (Nov. 11, 1947).
95. Wolf, H. W. and Hougen, O. A., Textile Research, *5*, 134 (1934).
96. Worall, G. W., British Patent 475,737 (Nov. 24, 1937).
97. Worden, E. C., U. S. Patent 1,866,917 (July 12, 1932).
98. Worden, E. C., U. S. Patent 1,814,106 (July 14, 1931).
99. Zundel, E. and Lantz, L., Bull. Soc. Ind. Mulhouse, *91*, 559 (1925).

Wet Processing Exposition

(Concluded from page 427)

Unions will be in actual operation under power and pressure. The use of Rotary Unions is said to result in the following savings: considerable saving in power consumption, machines can be speeded up, labor savings, savings in installations, no loss of steam, gas or condensate.

In attendance: Factory representatives and personnel of the Charles C. Phelps Co., 1 Exchange Place, Jersey City, N. J., Metropolitan representatives.

Richmond Oil, Soap & Chemical Co., Inc.

1041-1043 Frankford Avenue, Philadelphia 25, Pennsylvania
Booth No. 19

On exhibit will be materials for spinning, scouring and dyeing aids.

In attendance: William Alkus, Vice-President, Henry M. Rubin, Salesman, Morton W. Levi, Chemical Engineer, John W. Schenkel, Textile Chemist, and Dave Judelsohn, Chemist.

Standard Brands Incorporated

595 Madison Avenue, New York 22, N. Y.
Booth No. 76

This exhibit will consist of a display of fabrics on which Diastafor has had its part in attaining the finish and handle. Visitors are invited to use this booth as a place to relax and discuss desizing problems.

In attendance: Howard L. Jenkins, Manager of Diastafor Department and W. Douglas Smith, Southern Representative.

Stein, Hall & Co.

285 Madison Avenue, New York, N. Y.
Booth No. 65

This booth will be used for reception purposes and visitors are invited to relax here and renew acquaintances.

In attendance: N. H. Nuttall, F. G. LaPiana, J. A. Fraser, Max Stettner, John Gercke, Emil Grilli, Dan Lipman, L. W. Peabody, M. G. Brekke and Roger Wallace.

Ten-Co Machine Co.

58-72 Mill Street, Paterson 1, New Jersey
Booth No. 74

Exhibited will be the tensionless continuous dye beck.

In attendance: Manager and owners of the company.

Trumeter Company

1265 Broadway, New York 1, N. Y.
Booth No. 21

On exhibit will be the Trumeter measuring instrument with ticket printer. This instrument is said to measure all types of textiles with high accuracy. The rolling section is combined with a flexible roller so that the thickness and type of material being measured will conform automatically. The brake arrangement and yardage recorder are said to eliminate slippage, lapping or spinning. A ticket or mill tag can be inserted on which the yardage is printed.

Also to be shown will be a new type piece end sewing machine manufactured by William Birch (Engineers) Ltd., Manchester, England.

In attendance: Eric Seligmann, Manager.

Van Vlaanderen Machine Co.

370 Straight Street, Paterson, New Jersey
Booth No. 61

There will be no machines on display at this exhibit but arrangements have been made with certain plants in the Metropolitan area to see the various machines in actual operation. Arrangements have been made with plants doing all types of dyeing so that visitors will be able to watch plant operation on any kind of fiber or machine in which they have a special interest. This plan was developed because actual plant conditions could not be duplicated in the booth.

In attendance: Technical representatives will be present to make the necessary arrangements for plant visits with a minimum of time and effort.

Wallerstein Company, Inc.

180 Madison Avenue, New York 16, N. Y.
Booth No. 20

In attendance: J. J. Casserly, J. A. Clark, Miss M. Cooney and Miss E. Samuels.

Walton Laboratories, Inc.

1186 Grove Street, Irvington, New Jersey
Booth No. 94

A complete line of industrial, commercial and residential humidifiers, as well as humidity controls and indicating equipment, will be exhibited. Various models will be in operation. The advantages of the Walton Humidification System, which can be used for spot humidification as well as complete humidification, will be demonstrated.

In attendance: William Feldermann, President, John B. Feldermann, Advertising Manager and J. R. Lewis, Industrial Sales Manager.

FABRIC MILDEW-RESISTANCE TESTS WITH ORGANISMS TOLERANT TOWARD COPPER AND MERCURY

PAUL B. MARSH

Physiologist, Plant Industry Station, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, Beltsville, Maryland

ALTHOUGH numerous micro-organisms are known to be able to tender cotton and other cellulosic fibers, most pure-culture tests of textiles with cellulose-decomposing organisms have been carried out with one or the other of two fungi, namely with *Chaetomium globosum* 1042.4 or with *Myrothecium verrucaria* 1334.2. To obtain quantitative data on the behavior of a wider range of fungi in such tests, experiments have been conducted with several other organisms on treated cotton duck samples. The fabric used contained a series of different percentages of metal per unit dry weight for each of four different copper-organic compounds and for pyridyl mercury stearate. Of the fungi used, several gave a decidedly more severe test of the copper-containing protective agents than either of the above-named common test organisms, while certain cellulose-decomposing *Penicillium* isolates were especially tolerant toward the pyridyl mercury stearate. Several implications of these test results are discussed at a point following the presentation of the data.

Test Conditions

In order to obtain comparative data, laboratory-mildew-proofed fabric was tested according to a standard pure culture procedure with *Chaetomium globosum* 1042.4 and with *Myrothecium verrucaria* 1334.2, much as is described in various procurement specifications and as is commonly practiced in numerous laboratories, and also by substituting singly in the same procedure each of several other organisms.

Inoculum for the test was secured by growing pure cultures of each of the different fungi for 12 or more days at 30°C. on a filter paper disc resting on top of a mineral salts agar medium in 250 cc. cotton-plugged Erlenmeyer flasks. All mineral salts-agar formulations used contained NH_4NO_3, K_2HPO_4, KH_2PO_4 $MgSO_4 \cdot 7H_2O$, and agar in quantities of 3.0, 2.1 2.7, 2.2, and 20.0 grams per liter respectively. Test fabric strips cut 6" x 1½" with the long dimension parallel to the warp and ravelled to 1" in width were wet in water containing 0.005% of the wetting agent "Gardinol" and sterilized in groups of five in 16-ounce French square bottles. They were then planted individually with sterile precautions on the surface of sterile mineral salts agar in other 16-ounce French square bottles which were then capped with ordinary screw caps modified to contain circular glass-cloth air vents ¾" in diameter. Fifty cubic centimeters of sterile water containing a few glass beads was added to the inoculum culture flasks, the spores brought into suspension by shaking, and the test strips inoculated with one cubic centimeter of the suspension by the use of a sterile pipette. After a two-week period of incubation of the test cultures at approximately 30° C., the strips were removed, rinsed in water, dried at room temperature, conditioned at 70°F. and approximately 65% relative humidity, and broken on a pendulum-type motor-driven Scott tester. Each bar and figure in the data as here recorded represents an average result obtained from five replicate test strips.

The *Chaetomium globosum* isolate used was #1042.4, a culture originally isolated in the Department in 1933 by Dr. H. Humfeld. Each of the several hundred cultures distributed from the Department for textile testing purposes since that time as *"Chaetomium globosum"* has been a subculture from this original isolation. The *Myrothecium verrucaria* isolate used was #1334.2, tentatively identified and incorrectly known for some time as *"Metarrhizium sp."* but later correctly identified by White and Downing *(3)* under its present name. *Gliomastix* #95 was received as a culture from Dr. W. L. White and *Penicillia* #9052 and #10125 from the American Type Culture Collection. The several other cultures used were isolated from soils, fabrics, and other sources in the author's laboratory. *Aspergilli* #37 and #45 were identified as *Aspergillus fumigatus* and *Aspergillus terreus* respectively, Pencillia #15.1, #33, #49.1, and 68 as "near *P. simplicissium*", all by Dr. K. B. Raper.

The soil burial test was carried out in a room maintained at approximately 30°C. in soils contained in 20-gallon glass-covered aquaria 30" x 12" x 12", each aquarium containing a layer of about 7" of soil. The test specimens were prepared for this test in the same manner as for culture bottle tests but were marked on one end in pencil to indicate their treatment. They were wet in water and planted vertically in the soil with a spatula so as to leave only about a half inch of the marked end projecting above the soil line.

The fabric employed was an 8-ounce gray cotton duck having an original breaking strength of 115 pounds. It was treated with mildew preventives by dipping it into a solution of each preventive in a suitable solvent, then passing it between metal rolls which had been substituted for the original rubber rolls on a household clothes wringer, and allowing the solvent to evaporate off at room temperature. Since the pressure on the wringer rolls was fixed and the liquid takeup known, the dry weight of the mildew preventive on the fabric could be calculated and could be varied by adjusting its concentration in the solvent solutions.

The mildew-preventives used consisted of four copper-containing compounds and one mercury-containing material, which may be described as follows: Copper naphthenate, a viscous, dark green liquid of 9% copper content, obtained from the Nuodex Products Co.; copper "tallate", a copper soap made from "tall oil", likewise a viscous, dark green liquid, 7% copper content, from the Shepherd Chemical Co.; copper oleate, a stiff, dark green paste of 10% copper content, obtained from the Nuodex Products Co.; copper hydrogenated resinate, a brittle dark green solid of 6% copper content, obtained from the Hercules Powder Co. All of the copper compounds except the last-named were applied to the fabric in a solvent mixture containing 3 parts by volume of Stoddards solvent and 1 part of acetone, the copper hydrogenated resinate being applied in benzene. The pyridyl mercury stearate was a white powder, obtained from the Mallinckrodt Chemical Works and stated to contain 35% of mercury. It was applied to the fabric in solution in a 1-1 mixture of Stoddard's solvent and ethyl cellosolve.

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Ware Shoals, South Carolina
Secretary
EDWIN A. BRIGGS
Southern Franklin Process Co., Greenville, South Carolina
Vice-Chairman — ROBERT H. SMITH
Treasurer — R. HOBART SOUTHER

South Central Section

Chairman
WILBUR K. NEWMAN
Peerless Woolen Mills, Rossville, Georgia
Secretary
HOWARD P. LOVELESS
Crystal Springs Bleachery, Chickamauga, Georgia
Vice-Chairman — JOSEPH H. O'NEIL
Treasurer — CHARLES GORDON

Mid-West Section

Chairman
JOSEPH H. JONES
Phoenix Dye Works, 1963 Southport Ave. Chicago 14, Illinois
Secretary
WILLIAM BOYD, JR.
Ciba Company, Inc., 325 W. Huron St Chicago 10, Illinois
Vice-Chairman — ELLIOTT MORRILL
Treasurer — EDWARD LARSON

Southeastern Section

Chairman
C. RUSSELL GILL
Southern Sizing Co., P. O. Box 167 Atlanta, Georgia
Secretary
S. JACK DAVIS
Callaway Mills, LaGrange, Georgia
Vice-Chairman — HOWARD M. WADDLE
Treasurer — ADAM FISHER, JR.

Western New England Section

Chairman
J. EDWARD LYNN
American Cyanamid Company, Stamford, Connecticut
Secretary
EDWARD A. MURRAY
Deering Milliken Research Trust, Stamford, Connecticut
Vice-Chairman — RAYMOND J. CAREY
Treasurer — ROBERT N. BROWNLEE

Pacific Coast Section

Chairman
FRANK P. BRENNAN
U. S. Testing Company, 1236 Maple Ave., Los Angeles, California
Secretary
H. A. DES MARAIS
General Dyestuff Corp., 37 Clementina St. San Francisco 5, California
Vice-Chairman — BENJAMIN O. RACE
Treasurer — SIDNEY SPRINGER

Hudson-Mohawk Section

Chairman
JACK EPELBERG
Cluett, Peabody & Co., 117th St. at 7th Ave., North Troy, New York
Secretary
WILLIAM A. NELSON
Ritter Chemical Company, Inc., 403 W. Main St., Amsterdam, New York
Vice-Chairman — DAVID O. HAMER, JR.
Treasurer — IRWIN J. SMITH

Student Chapters

LOWELL TEXTILE INSTITUTE
NORTH CAROLINA STATE COLLEGE
PHILADELPHIA TEXTILE INSTITUTE
NEW BEDFORD TEXTILE INSTITUTE
GEORGIA SCHOOL OF TECHNOLOGY
CLEMSON COLLEGE
BRADFORD DURFEE TECHNICAL INSTITUTE

ATLANTIC CITY CONVENTION
October 13-14-15, 1949
"Education through Association"

Technical Program

GENERAL TECHNICAL SESSION. — Thursday, October 13, 2 P.M.-5 P.M.

Three technical papers of general interest will be presented by well known leaders in textile research and should prove to be of importance to everyone, be he engaged in education, research, development or mill operation.

GROUP MEETINGS.—Friday morning, October 14, and Saturday morning, October 15.

Only two group meetings will be held simultaneously in order to avoid some of the confusion which has taken place in the past.

The Friday groups will be: Non-Cellulosic, Auxiliaries and Testing.

On Saturday morning there will be meetings of the Hosiery and Cellulosic groups.

On Saturday afternoon will be staged a new feature, provided enough interest is shown by the membership. This will consist of a question and answer period—the questions to be submitted in advance and answered by a qualified expert in the field of activity covering the question. These questions may concern any phase of textile processing and should be submitted as soon as possible so that the necessary arrangements may be made.

A chairman will be selected for each group, who will conduct the meetings and lead the discussion periods. Each of the group sessions will consist of four papers, each followed by a discussion period. An invitation is hereby extended to all A.A.T.C.C. members and to others engaged in fields of kindred interests in the above group classifications to contribute papers. Instructions for contributed papers follow.

Cellulosic Fibers—Cotton, rayon, and cellulose acetate or mixtures of these fibers are to be covered in this group. Papers are desired on the preparation for dyeing, printing and finishing; on research on fiber properties; and on the fundamentals of dyeing.

Non-Cellulosic Fibers—This group will concern itself with wool and other protein fibers, nylon and any other non-cellulosic synthetics, together with blends of these fibers. The papers for this group should be essentially the same as those for the cellulosic group.

Hosiery — The Philadelphia Section, which embraces Reading, is a very large hosiery center. It is expected, therefore, that there will be a very large attendance from this group alone and that the activity in this district should be an added attraction for our southern friends. Virgil Hartquist has already been appointed chairman of this group and has in mind a very attractive program. Papers are invited on any and all problems involved in hosiery processing.

Auxiliaries and Testing Group—These groups have been combined into one general group because they overlap at numerous points. In the auxiliaries field, papers are desired showing the development of new products, the better use of old products, new application and methods of evaluation. In the testing section, papers are solicited on new procedures and equipment, and on the evaluation of existing methods. The possibility of correlating test methods with consumer end use would be especially welcome.

Contributed Papers.—The following are the regulations governing contributed papers:

1. Anyone desiring to contribute a paper should notify Arthur W. Etchells, The Hellwig Dyeing Corp., Delaware Avenue and Comly Street, Phila. 24, Pa., *immediately,* giving the title of the proposed paper and the group in which it is to be presented. The amount of time estimated for the presentation of the paper should also be given. This should be from 30 to 45 minutes.
2. As soon as the number of papers available in each group is known, a selection will be made and the contributors will be advised as to whether their papers have been accepted. This must be done in the near future in order to assure the best possible arrangement of the program.
3. An abstract of the paper will be required well in advance of the program. Notification of the dead-line will be given later.
4. All papers in complete form ready for publication in the *American Dyestuff Reporter* must be available at the Convention. Earlier submission would be greatly appreciated.
5. Papers must not be primarily of an advertising or promotional character. However, the subject matter may treat of commercial products, machinery, instruments, or processing procedure of a commercial nature, provided that they are treated from a technical viewpoint.
6. The Technical Program Committee must be the sole judge as to which papers are to be accepted, but every effort will be made to include all suitable contributions in the program.

Suggestions.—Many members may have valuable ideas for speakers or papers which can be presented at the group meetings. Any such suggestions will be welcome. These, too, should be sent to Arthur W. Etchells.

The Technical Program Committee consists of the following members:

Dr. M. A. Dahlen, K. H. Barnard, Dr. F. Dannerth, Dr. H. E. Hager, Dr. S. Williams, R. W. Jacoby, H. Boxser, Dr. R. B. Seymour, Dr. V. B. Holland, Dr. W. Scott, A. W. Etchells, *Chairman.*

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Report of Hudson-Mohawk Section

A DINNER meeting of the Hudson-Mohawk Section was held at the Hotel Utica, Utica, New York, on March 18. An interesting paper was presented by Earle E. West of the Redman Trust entitled "The Redman Process of Shrinking Textiles."

Previous to the paper a minute of silence was observed in memory of Dr. Louis A. Olney. Irwin J. Smith presented the qualifications for various classes of membership in the association. 88 members were present for the dinner with over 100 present for the paper.

Respectfully submitted,
W. A. NELSON,
Secretary.

Report of Pacific Coast Section

THE Pacific Coast Section held its regular technical meeting and dinner at 6:30 P.M., Feb. 11, 1949, at the Mona Lisa Restaurant in Los Angeles, Calif.

Seventy-five members and guests heard Raymond W. Jacoby, Manager of Ciba Company's Providence, R. I. Office, give an interesting talk on "The New Look in Textiles".

The Pacific Coast membership appreciates the efforts of Eastern organizations in making possible highly respected technical men as speakers for our regular meetings.

Respectfully submitted,

H. A. DesMARAIS,
Secretary

Exhibits at Atlantic City Convention

NEARLY 10,000 square feet of floor space has been set aside for exhibits at the 28th National Convention to be held October 13, 14, 15, 1949 at the Chalfonte-Haddon Hall in Atlantic City, N. J.

This was announced recently by M. H. Klein, of Sandoz Chemical Works, Inc., chairman of the convention exhibit committee, who disclosed that early requests for space already have been filed by some of the leading firms in the dyestuff, textile machinery, chemical and allied industries. In addition to representative showings by these firms, there also will be exhibits by educational institutions important to the textile industry as well as extensive displays showing the work of research committees of the A.A.T.C.C., he added.

"The exhibit will reflect the scientific and technological progress of the textile and allied industries," Mr. Klein said.

The exhibit committee has arranged for floor space groupings ranging in size from seven feet by nine feet up to 15 feet by 10 feet, with several intermediate sizes available. Standard booths and signs showing company name and address will be provided by the committee and included in the rental fee. The committee, which has complete details on renting of furniture and servicing of booths, points out that the hotel has a "lift" with a platform 18 feet by five feet, three inches, available to exhibitors.

Walter F. Fancourt, 3rd, of W. F. Fancourt Co., general chairman for the convention, stated that the expected attend-

MEMBERSHIP ON APRIL 1, 1949

Section	Senior	Junior	Associate	Student	Total 1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939
Northern New England	436	33	66	10	545	550	556	528	469	402	407	398	391	349	327
Western New England	113	12	16	1	142	97									
Rhode Island	469	26	57	4	556	511	501	471	405	348	352	341	337	332	295
New York	1054	63	165		1282	1285	1262	1167	1008	817	707	651	606	538	483
Philadelphia	807	38	84	1	930	871	833	740	644	550	513	517	475	447	381
Piedmont	481	39	58	9	587	511	492	434	366	326	286	309	297	293	277
South Central	113	7	8	—	128	111	102	100	87	83	72	80	71	61	63
Southeastern	189	12	23	—	224	209	198	166	141	141	146	175	142	137	133
Mid-West	278	15	42	1	336	337	326	287	261	209	198	194	193	180	157
Pacific Coast	93	5	17	—	115	81									
Hudson Mohawk	92	12	13	—	117										
Student Chapters	—	—	—	312	312	240	142	50	14	20	56	117	80	59	51
Unclassified	237	25	74	4	340	286	286	237	199	151	122	82	87	80	71
	4362	287	623	342	5614	5089	4698	4180	3594	3047	2859	2864	2679	2476	2238
Corporate					300	300	299	302	299	184	82	77	33	33	32
Totals					5914	5389	4997	4482	3893	3231	2941	2941	2712	2509	2270

ance is placed at approximately 2,000 members. He pointed out that the Exhibits Committee will allocate space in the order of receipt of application.

Details on exhibits can be obtained from any of the following members of the committee, in addition to Mr. Klein: Harry L. Morgan, co-chairman, of James Lees & Sons Co., Bridgeport, Pa., Alfred Felgengreger, Continental Mills, Inc., Philadelphia, Bertrand W. Hayward, Philadelphia Textile Institute, Lloyd O. Koons, Scholler Bros., Inc., Philadelphia, Edward S. Pierce, H. W. Butterworth & Sons, Philadelphia, and Richard B. Stehle, Allegheny Dye Works, Philadelphia.

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Report of Mid-West Section

THE spring meeting of the Mid-West Section was held at the Hotel Schroeder, Milwaukee, Wisconsin, on May 7, 1949.

The afternoon meeting was called to order at 2:40 P.M., Elliott Morrill, vice chairman, presiding. Approximately 125 members and guests were present.

Mr. Morrill introduced Dr. Jack Epelberg of Cluett, Peabody & Company, Inc., who presented a very enlightening paper on chlorination treatments in general as pertaining to the shrinkproofing processes.

The vice-chairman then introduced Frank P. Zeidler, mayor of Milwaukee, who gave us a well received word of welcome and short discussion on the importance of industry to the growth of such a city.

The meeting was then opened to general discussion and several questions were submitted to Dr. Epelberg from the floor. Many also remained to inspect the various displays on shrinkage control after the meeting was adjourned at 3:45 P.M.

Dinner was served at 7:00 P.M. and 104 members and guests were present.

The minutes of the last meeting and the treasurer's report were read and accepted. The chairman then called on L. B. MacFarland, chairman of the outing committee, who made several important announcements concerning our annual cuting.

The following were appointed as a nominating committee:

S. J. Hefti, A. J. Feit, A. F. Blackburn, G. T. Latham, G. R. Kremers.

Joseph H. Jones, chairman, then introduced J. R. Bonnar, chairman of the General Research Committee, who presented an excellent paper on the "Inner Workings of A.A.T.C.C. Research".

The meeting was adjourned at 8:50 P.M.

Respectfully submitted,
WILLIAM BOYD,
Secretary.

Report of North Carolina State College Student Chapter

ON April 20, 1949, the North Carolina State College Student Chapter elected as officers for the coming college year, Reynolds A. Carnevale, *Chairman;* Everett H. Aspinwall, Jr., *Secretary;* and Christian F. Getsinger, *Treasurer.*

On May 4, C. Norris Rabold, of Erwin Cotton Mills, Cooleemee, N. C., addressed the Chapter on "Problems Confronting a Textile Chemical Graduate."

Respectfully submitted,
JOE R. STILLWELL,
Secretary.

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NNE Outing to be Held June 10th

THE annual outing of the Northern New England Section will be held on Friday, June 10th, at the Andover Country Club, Andover, Massachusetts. The outing committee, with Roland Derby as Chairman, has completed its plans for the usual full day of sport and fun. Golf may be played throughout the day and there will be facilities provided for bridge, softball, horseshoes, etc. The skillful will be rewarded by beautiful prizes.

Dinner will be served at 6:30 P.M. and reservations may be made with John Dalton, Chairman of the Dinner Committee.

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Report of Western New England Section

THE April meeting of the Western New England Section was held on Friday, April 8th at the Di Napoli Restaurant in Waterbury, Connecticut. In attendance were 56 members and guests.

Dr. D. H. Powers of Monsanto Chemical Company spoke on "Textile Finishing", placing special emphasis on resin treatments designed to eliminate laundering shrinkage in wolens and to promote crease resistance in rayons and cottons.

Respectfully submitted,
EDWARD A. MURRAY,
Secretary.

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Report of Lowell Textile Institute Student Chapter

AT the regular meeting of the Lowell Textile Institute Student Chapter on April 13, 1949, nominations were made, and on April 20, officers were elected as follows:

Chairman—Ludwig Rebenfeld.
Vice-Chairman—Robert Morrison.
Secretary—Dorothy McCarron.
Assistant Secretary—Donald Wiener.
Treasurer—Joan L. Gregg.

The final meeting for the college year was held on May 4, 1949. Chairman Gardner thanked all officers and members for their cooperation. It was announced that the award of the Association to the Senior of highest rank in the chemistry and dyeing course would be presented at graduation by a representative of the Northern New England Section. It was voted that the thanks of the Chapter to its officers be included in the Secretary's report.

Respectfully submitted,
JOAN L. GREGG,
Secretary.

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Report of New York Section

THE last meeting of the New York Section for the 1948-49 season was held on May 6th at Kohler's Swiss Chalet, Rochelle Park, New Jersey.

This meeting constituted the business meeting of the Section and reports were given by officers and committee chairmen and officers were elected.

Charles W. Dorn, Chairman, read a letter from Walter F. Fancourt, III, General Chairman of the 1949 National Convention extending an invitation to members of the New York Section to attend the Convention and pointing out that this year there were 70 booths available for exhibits and that the early response from prospective exhibitors was very gratifying.

John H. Hennessey, Treasurer, reported a balance on May 1st of $1,483.09 as compared with a balance of $1,240.80 on May 1st, 1948. He also reported a total attendance at meetings of 1180, an increase of 110 over the previous season.

Clark A. Heyden, Chairman of the Membership Committee, reported the following figures on the membership of the Section: *Senior*—1054; *Junior*—63; *Associate*—165; *Corporate*—99; *Total*—1381. This compared with a total at the same time in 1948 of 1391. He pointed out that although there was a loss of 10 members there was a greater number who had transferred to other newly-formed sections so that actually there was an increase in members in the area covered by the New York Section.

Henry Young, Chairman of the Corporate Membership Committee, reported that there were 5 new members, 3 had resigned, and that 4 had not yet paid. In the drive to increase corporate members contributions by 50%, he reported that 33 had done so and that there was an increase of $7025 in corporate payments from this Section.

Robert W. Brewer, Outing Chairman,

reported on plans for the Annual Outing and Golf Tournament to be held on June 17th at the North Jersey Country Club. Among the new events to be added this year are a driving contest, a putting contest and a contest for dart players.

The following officers were unanimously reelected: Charles W. Dorn, *Chairman;* Paul J. Luck, *Vice-Chairman;* John H. Hennessey, *Treasurer;* Norman A. Johnson, *Secretary.* The nominating committee was composed of Patrick J. Kennedy, Chairman, George L. Baxter and Robert O'Hara.

The second portion of the program was in the nature of an experiment on the part of the New York Section with the thought in mind that, if successful, would be continued as an annual feature. This portion was strictly in the spirit of fun and was much enjoyed by those present.

"Dr. Marcus Kleber" was unable to be present to discuss "Relative Differences Between European and American Textile Chemists' Scientific Approach." However he was impersonated to perfection in accent and action by Dr. Walter Scholer of American Viscose Corporation. The paper was prepared by Arthur Wachter, also of American Viscose.

The subject of the paper was developed by defining each word of the title, starting at the end. Thus, "approach" means merely the zig-zag manner in which a conclusion is reached in our industry; "scientific" apparently means any number of things and you take your choice; "chemist" means a person versed in science, a dealer in chemicals, or a druggist; "textile", combined with "chemist" was interpreted to be "the guy who knows everything"; "American" was assumed to be a peculiar handle for the people of the United States; "European" as a native of Europe; "difference" could mean a controversy or a quarrel, or a separate treatment of a scientific difference; "relative" could mean a condition of dependency or close relationship such as exists between the American and European chemist. The paper was summarized by the statement that the relative difference is Nebulose—meaning its parts are confused or mixed and that "a lousy dye job stinks, no matter where it is."

There seemed to be violent disagreement with some of the speaker's statements by members of the audience including such distinguished hecklers as Dr. Herman E. Hager, George Ramey, Ernest Hart, P. J. Wood, Ralph Riegner and Max Winkler.

Following the presentation of this learned discourse, George Baxter entertained with a song.

Attendance was about 250.

Respectfully submitted,

NORMAN A. JOHNSON, *Secretary.*

Atlantic City

Convention

October 13-14-15

"Education

through

Association"

CALENDAR

WESTERN NEW ENGLAND SECTION
Outing: June 24

NEW YORK SECTION
Outing: June 17.

PHILADELPHIA SECTION
Meetings: September 16, November 11 (Kugler's, Philadelphia).
Outing: June 10.

PIEDMONT SECTION
Meetings: June 24, 25, 26 (Ocean Forest Hotel, Myrtle Beach, S. C.), November 5 (Charlotte Hotel, Charlotte, N. C.)

HUDSON-MOHAWK SECTION
Meetings: September 16, November 18.
Outing: June 17.

RHODE ISLAND SECTION
Outing: June 24

MID-WEST SECTION
Outing: June 18 (Lake Lawn, Delavan, Wis.).

NORTHERN NEW ENGLAND SECTION
Outing: June 10 (Andover County Club).

COUNCIL
Meetings: June 9, Sept. 9, Dec. 9.

RESEARCH COMMITTEE
Meetings: June 9, Sept. 9, Dec. 9.

NATIONAL CONVENTIONS
1949: October 13 to 15, Chalfonte-Haddon Hall, Atlantic City.
1950: Portsmouth, N. H.
1951: October 18 to 20, Statler, New York.

EMPLOYMENT REGISTER

This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.

49-10

Education: Bradford Durfee Technical Institute, dyeing and finishing, graduating in June, 1949.
Experience: Summer in dyeing and finishing plant.
Age 22; married; references.
4-18, 5-2, 5-16, 5-30

49-11

Education: B.T.C., Lowell Textile Institute.
Experience: Superintendent of Dyeing and finishing, wool and other fibers.
Age 37; single but with dependents; references; New England preferred.
5-16, 5-30, 6-13, 6-27

49-12

Education: Pratt Institute, and City College of New York, chemistry.
Experience: Continous employment since 1920 as laboratory supervisor, dyer and mill chemist.
Age 49; married; references; position in southwest U. S. desired.
5-30, 6-13, 6-27, 7-11

49-13

Education: Lowell Textile Institute, B.T.C.
Experience: Laboratory and mill chemist, 1931 to date.
Age 41; married; references; position as plant chemist or executive, or in sales, desired.
5-30, 6-13, 6-27, 7-11

49-14

Education: B.S., Brooklyn College, now completing year in Bradford Durfee Technical Institute.
Experience: Instrument specialist, U. S. Army Air Corps.
Age 25; married; position as dyestuff or textile chemist near New York, or elsewhere on Atlantic Coast, desired.
5-30, 6-13, 6-27, 7-11

All correspondence regarding the Employment Register should be addressed to the National Secretary

New York Section—

JIG DYEING AND THE VALUE OF HOUSINGS*

IN spite of the current development of continuous dyeing, the jig and the dyebeck are still the basic machinery and are old standbys for processing piece goods in the open width and rope, respectively.

The deceptively simple appearance of the jig is apt to lead to the assumption that the jig dyer has little to concern him besides shade matching. However, the experienced man knows that there are many factors which have to be considered in order to obtain level results free from end to end or selvedge to center shading.

The dyer's problems are not simplified by the use of cotton, viscose, acetate rayons, and nylon in fabrics which do not lend themselves to processing and dyeing in rope form. I have in mind fabrics such as taffetas, tackle twills, failles, bengalines, satins, and many bathing suit fabrics which are dyed in open width.

Some of the problems with these qualities arise from the fact that the fabric is in the liquor for only a few seconds on each pass, or for a total of approximately one minute in the course of one to two hours of processing. Therefore, it is obvious that actually scouring, bleaching, and dyeing take place in the rolls, where little migration can occur and where the selvedges cool to temperatures considerably lower than those of the centers of the rolls. It is elementary to many of us that the lack of heat retention on the outer edges of the rolls is the cause for much of the difficulty in the processing of these fabrics on the jig. Nor is this problem encountered only in the dyeing operation, as many will attest who find it necessary to desize, scour, bleach, and dye on the jig.

Since this paper concerns itself with both jig dyeing principles and the value of housings or jig enclosures, permit me to run the gamut of jig processing to lead up to desirability of enclosed jigs.

The first principle of jig dyeing is to have an even roll which will run straight and true. Some qualities must be tenter framed in the greige to give them the regularity to permit jig processing.

In most cases, the roll is batched wet on the jig, but some fabrics are best batched on the jig through a wetting liquor or enzyme bath. Nylon fabrics are usually heat-set before being placed on the jig.

Many qualities first require enzyme treatments to facilitate removal of gelatine, gums, and starch, and in this initial processing temperature variations between the selvedge and center of rolls have an influence on the ultimate results. These treatments normally consist of heating the jig liquor to 160° F., adding wetting agent and enzyme, and running from two to four ends or more. The activity of the enzyme is reduced along the selvedges where the temperature is lower, with the result that conversion of starch to soluble sugar may be incomplete. Here we meet for the first time in our processing the undesirable lack of uniform temperatures at the point where the real action of the enzyme is being carried on, namely, the roll. The cooling of the selvedges in the case of open jigs requires that goods be given more ends through the liquor, running up the cost of the operation, which could be avoided were an even temperature maintained throughout the roll.

Desizing is followed by a boil-off bath using alkalies, soaps, or synthetic detergents as the fabric may require. Mill grease and graphite present problems since the mechanics of a jig give a minimum of flushing action. Emulsions of solvents, such as deodorized kerosene, may be allowed to soak into the cloth, followed by detergent baths and treatments with oxalic acid and ammonium acid bifluoride to remove iron compounds always present in dirty goods. Here again, in many cases, higher and more constant temperatures than can be obtained on open jigs would assist the detergent action.

When bleaching is required, the dyer has his choice of hypo-chlorites, chlorite, peroxides, and the frequently useful permanganate-bisulphite combination. Where applicable, the chlorine bleaches are inexpensive, but complete anti-chloring is necessary to avoid tendering and yellowing in subsequent dry heat, agers, steamers, or decators. Peroxide-silicate bleaches are often undertaken by allowing the saturated roll to stand overnight. Permanganate bleaches, which are also used to clear effect threads in cross dyeing, must not be used for fabrics containing rubber. When permanganate bleaches are used, complete removal of manganese compounds is necessary or the fabric will develop a cream shade during storage.

With the fabric adequately cleaned and ready for dyeing, the dyer's experience requires him to decide whether to dye the material with normal threading or, if the quality requires, thread the jig so that cloth runs directly down from the batching rolls to the idler rolls in the liquor without running over the expanders. This assists in minimizing selvedge to center shading for certain qualities.

Depending upon the end use of the fabrics, the dyer prepares the dyebath with auxiliaries such as alkalies, water softeners, detergents, or dispersants. The difficulty of completely rinsing goods on jigs makes it advisable to avoid synthetic detergents if the goods are subsequently to be treated with a water repellent, since traces of synthetic detergents left in the goods will reduce the spray rating. Soap, on the other hand, will be converted to insoluble aluminum soap by the water repellent, and will not interfere with the repellency.

Fabrics are often pre-padded with dye solutions and dispersions, with the dyeing being completed on the jig. This may even be carried out on the greige goods followed by a combination desizing and dyeing on the jig, which is a very economical technique for some fabrics. Padding, where possible, helps to overcome warpiness and selvedge to center shading, and assists in penetrating heavy or tightly woven fabrics. Vat dyeing very often is done on the pad with the jig being used for the reduction, oxidation, and soaping of the padded vat dyes.

As for all dyeing, the proper selection of dyes for jig work is based on shade, fastness, cost, and dyeing properties. The color selection for dyeing properties is very important and, in general, the most suitable dyes for jigs are those with a slow absorption rate. Colors with low absorption rate are also essential for padding. Such dyestuffs give the least trouble with end to end shading, since the dye liquor will maintain a more uniform composition as the cloth runs than it will if rapidly absorbed dyes are used. If rapidly absorbed dyes must be used, ex-

(Concluded on Page P444)

* This paper was prepared anonymously for the meeting of the New York Section on April 1, 1949 and read by the Technical Program Chairman, Weldon G. Helmus.

Piedmont Section—

HOSIERY COLORS AND DYEING*

J. A. CRUMLEY

Superintendent of Finishing, Bryan Full Fashioned Mills

COLOR is the response of your vision to certain wave lengths of light. Light and color are essentially the same. Our sense of sight and its perception of color is a highly personal experience. Color is one of the most useful elemnts of life. It has brought more happiness and attractiveness to the human race than any one other element.

The sensation that exists in your brain created by the reception of wave lengths of light, we therefore call color.

Our sense of sight is attuned to a very narrow band of visible light waves in the known spectrum of radiant energy.

In studying the principles of color dynamics we find this narrow band of visible light has a wave length of 17 millionths of an inch beginning with the violet end of the spectrum, and progresses by approximately 2 millionths of an inch for each color division until it reaches 30 millionths of an inch in the red end of the spectrum. This is all we can see. Our world of beauty exists in that small scope. Beyond the visible red there exists a wide band of infrared or heat waves, and then radio waves with wave lengths miles long. On the other side of our visible violet comes ultraviolet, X rays, gamma rays, and lastly cosmic rays of infinitesimal length. This visible light is only one octave in a range of 60 to 70 octaves of the magnetic spectrum. Color waves produce power and energy. This reflected light traveling at 186,000 miles per second produces the color effect within your eye.

Violet with 17 millionths of 1 inch,
Blue with 19 millionths of 1 inch, and
Green with 20 millionths of 1 inch
are classed as cool colors.

Yellow with 22 millionths of 1 inch,
Orange with 25 millionths of 1 inch, and
Red with 30 millionths of 1 inch
are classed as warm types of color.

Muscular reaction to them is in the same proportion. Their therapeutic value is from calm to stimulating. Color is an emotional experience. It is something alive. We must enjoy its emotional values. Our emotions reflect our moods and feelings. A feeling of warmth or coolness can be experienced with a color. They are inviting or repulsive. Our intellect appreciates color by the understanding of color relations to each other or why they are attractive.

A woman buys a pair of hose by color appeal. They might be made of the sheerest nylon on the finest gauge machines with perfect fabric, but if the color is not appealing or pleasing she will not give them a second look. So good color designing is the basis for sales stimulation. Emotional eye appeal is what the color stylist must strive for. The sales battles of the next few years are going to be fought on the field of color. You, as dyers, are going to be in the front line trenches. The skill with which you do your job is going to be reflected in your sales.

You can do a lot of things with color. Optical illusions can be created that will make the wearer appear slimmer or larger as desired. Colors build up or stifle individuality. The right colors bring out the best there is in an individual. They augment and stimulate.

The consumption of hosiery has been greatly increased by frequent color changes. Every time a woman wears a color it decreases in attractiveness due to the law of diminishing returns. Her emotions demand new colors.

Three factors enter into color producing. The dyer and his dyestuff manufacturer, the stylist and selling agent, and the ultimate consumer who demands color changes often.

Visual actuity and color discernment are the tools of the skilled dyer. The development of color sense is a matter of training. As many as 250 to 300 hue elements can be separated by a good dyer. With the three pigment primaries you daily use, it has been estimated that more than 18,000 color combinations can be produced. The trained eye is able to separate gradations of the same hue with differences of 3 one hundredth of one percent.

So much for the mechanics and emotions of color.

Now let us look at the color cards most of you operate by and how they are arrived at. The Textile Color Card Association of the United States is the authority from which we get what we call the Standard Color Card. At the Dyeing Symposium over which I presided in Chattanooga last December, a number of questions were asked regarding which colors led the field and how they were selected.

I am indebted to Margaret Hayden Rorke, Secretary and Managing Director of the T.C.C.A. for the following information. I feel that it will be of interest to you. I quote:

"Definitely, the costume colors dominate the various fields of fashion. We create our woolen and rayon colors first. Then come the coordinating of our Shoe, Millinery and Glove colors. Hosiery is last. This coordination is done through the various committees in these allied industries through the medium of our color cards.

"When our Hosiery Committee meets, it has vast fundamental information offered it. I personally do a great deal of experimental dyeing for hosiery colors long before the Committee meets. Very great consideration is given by me in offering the Committee colors which have been developed because of their relationship to the costume, shoe, millinery, etc. We have all the colors in fabrics, the leathers and other important information for the members of the Committee, so they can see this color relationship. Then from all the hosiery colors which I have experimented with, we decide on the ones we adopt for the Hosiery Card.

"As you know, these colors are issued in the confidential form with the large detachable swatches prepared especially to facilitate the dyeing of the colors. Later, the regular card comes out with the smaller swatch for practical merchandising purposes.

"Our hosiery colors are very carefully dyed by excellent dyers and the best dyestuffs used, and fluorescent effects are definitely avoided. We have the special facilities of the Gotham Hosiery Dye House in Philadelphia. When the final sets of colors are being dyed, I personally spend two days in Philadelphia working in the dye house and passing upon the matching.

"This answers your various questions, but, I think, as a little sidelight, you will

* Presented at meeting, Piedmont Section, April 2, 1949.

be interested in the following.

"In 1924, I personally organized, as Managing Director of The Textile Color Card Association, the standardization and fashion development of the standard and seasonal hosiery color cards. I solicited the cooperation not only of our hosiery members, but that of the National Association of Hosiery Manufacturers when John Nash McCullough was its executive head. Under the auspices of our Association, we held a very large meeting at the Astor Hotel and brought from all over the country the hosiery manufacturers, to discuss the need of color organization in the hosiery industry. As a result of this meeting a very important Committee was formed of the leading manufacturers, and for nearly eight or ten weeks this Committee met with me in the selection of standard colors and thus was created the first edition of the Standard Hosiery Card of America. Later a second edition was issued with additional colors. Both of these cards were issued in tubular pure silk hosiery fabric. The first seasonal card was issued in 1925 and during the transition of time and the needs of the industry, these cards have gone through the evolution of the colors being issued in pure dye silk and grosgrain ribbon, tubular pure silk hosiery fabric, then in sheer silk hosiery swatches. Then during the war in rayon and then, with the advent of nylon, the cards showed colors in rayon and nylon, all nylon—and with partial return of silk, we showed them in rayon, nylon and silk. Then we reverted to nylon exclusively, such as our current card."

At the Bryan Finishing Plant we select our own colors. "Always a shade ahead" is on all advertising. Bryan Stylist, Mrs. Virginia Silleck, resides in New York City to stay in close touch with the clothing and shoe centers. Color promotions are almost a weekly occurrence. We revolve our colors so fast that every month or so some are discarded while new ones are being added. This up to the minute color schedule keeps our color line in step with the monthly changes of the calendar. Shades are lightened or darkened as we proceed into warmer or cooler seasons. Should one of our color promotions start a new shade that quickly becomes popular, we can pass it along to our other customers. Promotions keep us up to date. They keep our customers happy.

New dye machines are now being installed to give us faster color service.

We pride ourselves on close color matching. Every lot is checked twice by a master color sample. With Bryan, "Color" stands side by side with "Quality Knitting". So, I can truthfully say there is never a dull moment. Next month the major part of our Fall and Winter shades will be selected. So this color cycle goes on and on. If you like color as I do you will never tire of it.

So here is to more and more of beautiful colors which make American women the best dressed in the world.

—♦ ♦—

Housings—

(Concluded from page P442)

ternal means of control of absorption rate are employed. These controls normally consist of temperature and/or salt control, as well as breaking up the dyestuff charge into multiple additions after each of several ends. Salt controllable dyes should be dyed with gradual additions of salt at each end of the batch from the third end onwards, and if they are controllable by temperature as well as by salt, the same precaution should be taken, namely, a gradual rise of temperature at each end, at the same time making gradual additions of salt from the third end onwards.

I think I have shown, with some degree of clarity, that the pre-dyeing and dyeing operations on the open jig and the compensation for the lack of temperature control lead to the wasting of valuable labor and machine time, the increasing of costs and, what is more regrettable, the increasing of "seconds" or defective goods through unnecessarily long processing.

I think it is generally admitted that we see many enclosed dyebecks which are set up primarily for the conservation of steam. I can safely say that we shall see an increasing number of enclosed jigs coming into being. While we could have used them for many of the fabrics we have been processing, the growing importance of Nylon and the desirability for its dyeing in enclosed jigs has caused an increasing interest in enclosed jig operation.

Housing a jig has one prime purpose. It enables the goods to be held at uniform temperature from center to selvedge and end to end and, if desired, a higher temperature can be obtained than is possible on the open jig. Although some jigs were enclosed years ago to minimize selvedge oxidation in the dyeing of sulfur blues, they became indispensable for dyeing acetate fabrics with the high temperature dyeing Acetate Azo Blue in the latter part of the thirties. This badly needed product, free from the gas fading weakness of the Anthraquinone Blues, cannot be handled on open jigs without badly shaded selvedges. A number of firms installed housings on their jigs and obtained excellent results with the Azo Blue, and found that the housing showed advantageously on other types of dyes and dyeing as well. In general, levelness and penetration are improved and often crocking fastness is much improved. One case in which the need for higher fastness is causing many dyehouses to install jig housings, is that of Nylon fabrics for such end uses as automobile upholstery and seat covers. These fabrics have been dyed with acetate dyes on open jigs without serious troubles, but when the superior wet fastness of selected acid or chrome dyestuffs is requested by an increasingly competitive market, the dyer using open jigs finds himself in serious trouble with shaded goods and experiences difficulties in building up heavy shades. As is generally known, the acid and chrome dyes are best absorbed by nylon at temperatures corresponding to the full boil, whereas their affinity drops off rapidly at lower temperatures.

One last type of processing where the high and uniform temperatures of covered jigs is a decided advantage is in stripping, especially when it is necessary to use the sulfoxylates. With open jigs it is often impossible to completely strip the selvedges of rolls which have been dyed with dyestuffs and which are only moderately dischargeable.

In designing or purchasing covers for jigs, considerable thought must be given to avoid unworkable, inefficient, and impractical arrangements. Not only must the jig serve for high temperature operation, but it must be designed so that the jig can be employed for such low temperature operations as rinsing.

Obviously, the enclosure needs well placed windows through which the operator can observe all parts of the operation. At the same time the interior must be well illuminated. Suitable vents must be provided to minimize the blast of hot vapors in the operator's face when the cover is raised for sampling. External means of reading both liquor and vapor temperatures are desirable. It is likewise important to keep all greased bearings outside the enclosure. Inside the enclosure the jig should be equipped with a steampipe off-set from the liquor to ensure a steam atmosphere. Occasionally it is found desirable to supplement this by a closed steam coil to attain the temperature desired.

Last but not least, the jig enclosure must be designed to permit easy loading and unloading as well as accessibility.

The ever increasing complexity of textile qualities and fibers is compelling us to improve our basic machinery. In the modern stainless steel, tensionless, covered jig, today's dyers have a greatly improved machine with which to meet the problems posed by those new fibers and fabrics.

TRADE NOTES • NEW PRODUCTS

• New Cover for Dye Jigs

Glasco Equipment Corporation, Paterson, New Jersey, announces an entirely new type of cover for dye jigs which has two curved cover sections moving in circular tracks at the end of the enclosure. The two sections divide at the top and can be moved down, separately, to clear the jig, front and back, for loading and unloading free from overhead obstructions. There are no cables, chains, pulleys, or counterweight posts. The enclosure sections move on Bakelite rollers which are said to eliminate friction and are fitted with counterweights which move in the circular end tracks in which the enclosures themselves move. It is stated that opening and closing the enclosure sections is an effortless operation, accomplished by a touch of the hand.

The enclosure sections form a complete arc over the jig and when closed, it is stated, all condensation drains down inside the enclosure. It is further stated that when either or both the sections are opened, the steam vents at the top with no dripping to injure the goods in the jig nor steam blast to endanger the operator. When closed, the enclosure permits full observation by means of large glass windows.

Stainless steel is used in all parts with the exception of the lead counterweights. It is stated that the end frames fit most jig castings presently in use and the enclosures are easily transferred to new jigs when this is desired. The heavy "E" ring frame is firmly anchored to the jig casting in a rigid assembly. The enclosure is said to take a minimum of floor space and working space and all working prts and jigs bearings are outside the enclosure. Installation is said to take little time and occasions little interruption of production. Patent application has been made.

• General Dyestuff Releases

General Dyestuff Corporation, 435 Hudson Street, New York 14, N. Y., announces release of circulars describing the following products:

Para Orange RRA-CF—a new homogeneous Para color which produces fairly bright reddish shades of orange on cotton and rayon when coupled with Nitrazol CF Conc. It is said to possess fairly good fastness to washing on both cotton and rayon. The light fastness is only poor to moderate on cotton but fairly good on rayon. It is stated that an aftertreatment with anti-crease resin finishes improves the light fastness of the product slightly and increases its fastness to washing distinctly. It possesses very good affinity at the boil and good affinity at 150°F. It exhausts at a rapid rate at the boil, at a moderately rapid rate at the lower temperature and responds slowly to additions of salt. Acetate effects are stained slightly and animal fibers and nylon considerably. It is suitable for application in all types of dyeing machinery and is sufficiently free from copper and manganese to be suitable for dyeing material which is to be rubberized. *Circular G-580.*

Fast Red Salt PDC—the diazotized and stabilized salt of Fast Red PDC Base. It is soluble in water and couples directly with naphtholates to form insoluble Naphtol colors. It yields bright reds with most naphthols. However, on grounds prepared with Napthtol AS-G Supra a bright greenish yellow is obtained and combinations with Naphtol AS-LB or AS-DB yield brown shades and with AS-SG, wine shades. The most useful combinations, as illustrated in the circular, are said to possess good to excellent fastness to light, moderate to good fastness to chlorine, good to very good fastness to washing and moderate to good fastness to hot pressing. It is sufficiently soluble to be applicable on all types of dyeing equipment. *Circular G-588.*

*Katapol K Conc.**—a synthetic surface-active agent said to possess cleansing, wetting, dispersing and level dyeing properties. It is cation-active. It is intended for use as a scouring agent for wool in neutral or acid solution, a scouring agent and dyeing assistant for shearlings, a cationic stabilizing agent and cationic penetrant and a cleansing agent for removal of mineral oil or wax from paper pulp or waste paper. *Circular G-590.*

Diazo Brilliant Scarlet 3GA-CF—a new homogeneous diazo dyestuff for dyeing cotton, rayon and other vegetable fibers in their various forms. Dyed on cotton or rayon and developed with Developer AMS or Beta Naphtol, it produces fairly bright yellowish shades of scarlet said to possess fairly good to good wash fastness on cotton and good wash fastness on rayon. The fastness to light is moderate on cotton and fairly good on rayon. An aftertreatment with urea-formaldehyde resin for anti-crease finishes has no appreciable effect on the light fastness and melamine-formaldehyde resin only slightly effects the light fastness. The wash fastness is said to be increased distinctly. It has very good affinity at the boil and good affinity at 150°F. It exhausts at a rapid rate at the boil, at a moderately rapid rate at the lower temperature and responds normally to additions to salt. Acetate effects are stained slightly and animal fibers and nylon are stainaed considerably. It is sufficiently free from copper and manganese to be suitable for the dyeing of material to be rubberized. Dyeings are dischargeable to a white and dead cotton is covered well. *Circular G-599.*

* Patented

• Warwick Chemical Appointment

Donald J. Eccleston who, as noted in our May 2nd issue, has been appointed Manager of the Suntone Pigment Colors of the Warwick Chemical Co. Division of Sun Chemical Corporation.

• Butterworth Vacation Period

The home office and plant of H. W. Butterworth & Sons Company, York and Cedar Streets, Philadelphia, will be closed for vacations from Friday, July 1, to Monday, July 18. The plant will not be in a position to receive material during that period.

• 46th Convention, Phi Psi

"Progress in Textiles through Education, Development and Fellowship" was the theme of the 46th annual convention of Phi Psi, national textile fraternity. Held at the Biltmore Hotel in Atlanta, Georgia, on May 6-7 with the Atlanta Alumni chapter and the student chapter at the Georgia Institute of Technology acting as hosts, the meeting was well attended with over

100 delegates representing nine student chapters and twelve alumni chapters.

Highlighting the business meeting on Saturday morning was the election of M. Earl Heard, vice-president and director of research of West Point (Ga.) Manufacturing Co., as grand president of the fraternity. Professor James L. Giblin of New Bedford (Mass.) Textile Institute was elected grand vice-president.

Total membership of the fraternity, which was founded at Philadelphia (Pa.) Textile Institute in 1903, is now 3552, according to Harold H. Hart, executive secretary and founder of the fraternity. During the year, honorary memberships were bestowed on Charles W. Carvin, President of Charles W. Carvin Co., New York, N. Y.; Thomas R. Foltz, Jr., instructor at Philadelphia Textile Institute; J. W. Ferguson, instructor, Bradford Durfee Technical Institute; Ben L. Whittier, professor at School of Textiles, North Carolina State College; R. A. Gilliam, Burlington Mills, Greensboro, North Carolina; Fuller E. Callaway, Jr., LaGrange, Ga.; J. P. Moses, West (Texas) Textile Mills; George W. Pfeiffenberger, Chicopee Manufacturing Corp., Lubbock, Texas.

At the annual banquet on Saturday evening, Mr. Heard paid tribute to Professor Edmond W. Camp, dean of the textile school, Alabama Polytechnic Institute, Auburn, Ala., for his "splendid record of service" to the textile industry. Professor Camp was presented with a scroll from Phi Psi Fraternity in recognition of his service to the fraternity and the industry; a silver tray and also a bound volume of letters were other tokens presented.

A. Kempton Haynes of Atlanta, Ga., and Cleveland Adams of Lanett, Ala., accepted charters for Atlanta and Chattahoochee Valley alumni chapters respectively.

The several exhibits of textiles made by student members of active chapters were interesting and attractive. First prize, which was a $100 cash award, was won by Alpha charter, located at Philadelphia Textile Institute. Chapters at New Bedford Textile Institute and Georgia Institute of Technology won second and third prizes respectively.

• Cyanamid Appointments

The New Product Development Department of American Cyanamid Company announces the appointments of Dr. James R. Dudley as Supervisor of New Product Development and John D. McPherson as Supervisor of Market Research Activities.

Dr. Dudley joined the American Cyanamid Company in 1940 as Research Chemist in the company's Stamford Research Laboratories. He has been primarily concerned with organic nitrogen compounds and with synthetic resins, and his publications and patents have been principally devoted to amino and ion exchange resins. Prior to his new assignment he was Assistant in Charge of Research on Polymers and Resins. Dr. Dudley graduated from Carleton College in 1936 and received his advanced degrees from the University of Iowa.

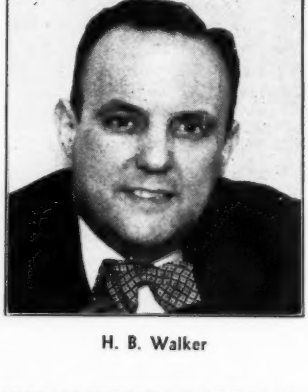
Mr. McPherson joined the American Cyanamid Company in December 1945 after his release from the Chemical Warfare Service of the United States Army. During the war, he was Chief of the Production Division at the Army Chemical Center and was Chief of the Arsenal Operations Department, Edgewood Arsenal, Maryland. When released from the service, he held the rank of Lieutenant Colonel.

Before entering the Armed Services, Mr. McPherson was Superintendent of the Development Plant of G. & A. Laboratories, Inc. of Savannah, Georgia. Prior to his new appointment, he was assigned to the Technical Division of American Cyanamid and worked on engineering development of new plants.

The recently formed New Product Development Department of American Cyanamid Company is chiefly concerned with determining whether there are economical uses for selected products which have been developed in the company's research laboratories, and for which sales applications are not established. The department has already published a number of New Product Bulletins devoted to organic nitrogen compounds and eventually will work on a broader range of company products.

• New Houghton Department

A new product development department has been established by E. F. Houghton & Co., manufacturer of industrial oils, chemicals and leathers, it has been announced by G. W. Pressell, executive vice-president of the company. The department is set up to "facilitate the handling and evaluation of newly developed products, and to bring about closer liaison between the research, production and sales staffs," Pressell explained.



H. B. Walker

Dr. H. B. Walker has been named manager of the new department. He has been with Houghton for two years during which time he was assistant to Dr. R. H. Patch, vice-president—operations. In that capacity he directed application research and supervised production and engineering problems for the Company. He will relinquish his former duties as assistant to Dr. Patch.

As manager of product development, Dr. Walker will also work towards the discovery of new product needs through market research, review ideas and initiate necessary research for new applications, of existing products, give technical service to customers on new products, and supervise application research.

• Frank A. Lester to Retire

Frank A. Lester, New York representative of the Slatersville plant of Kendall Mills, will retire on July 1st, exactly 34 years to the day from when he started to work for Kendall on July 1st, 1915.

Mr. Lester, who has spent 50 years in the finishing industry and is now 72 years old, plans to spend his leisure at his home in Wilton, Connecticut.

Mr. Kendall's career in the textile finishing business began in 1899 at the Norwich, Connecticut branch of the U. S. Finishing Company. He resigned three years later to become assistant to the general manager of the Sayles Bleacheries. Six years later he went to Kendall Mills' Slatersville plant as assistant treasurer to H. P. Kendall and came to New York in 1921. He had been active on committees in the National Association of Finishers and is a member of the Arkwright Club and the Norwich Society of New York.

• Denver Branch, U. S. Testing

It was recently announced that the Denver, Colorado branch of the United States Testing Company would open June 1. The laboratory will be located at 4639 Lafayette Street.

The Board of Directors of the United States Testing Company have authorized this further expansion of the Company to serve the western wool growers, handlers and dealers. It is planned that the laboratory initially will operate as a wool test laboratory, bringing to the wool producer in the west for the first time an unbiased, neutral laboratory service. The laboratory will be under the direction of Berry Duff, wool specialist. It is planned to expand the activities of the western wool laboratory to service the entire Rocky Mountain area in industrial testing and research.

• New Research Corporation

Monsanto Chemical Company and American Viscose Corporation have joined in the formation of a new company, it was announced recently.

The new corporation will engage in research and development work in the field of synthetic fibers. The full announcement follows:

"Monsanto Chemical Company and American Viscose Corporation have joined in the formation of a new company to engage in research and development work in the field of synthetic fibers. The corporation, as yet unnamed, will be headed by Dr. Carroll A. Hochwalt of Dayton, a Monsanto vice president, and will pursue its research and development work through the laboratories of Monsanto and Viscose.

"The officers of the company, besides Dr. Hochwalt, will be Dr. Charles S. Venable, of Philadelphia, director of chemical research for American Viscose, who will be vice president of the new corporation, and F. William Koster, of Philadelphia, also of American Viscose, who will be secretary-treasurer.

"The following will be members of the board of directors: William M. Rand of St. Louis, president of Monsanto; Dr. Charles Allen Thomas, also of St. Louis, Monsanto executive vice president; Dr. Hochwalt; Charles S. Cheston of Philadelphia, Monsanto board member; Dr. F. H. Reichel of Philadelphia, chairman of the board and president of American Viscose; Dr. Venable; Charles S. McCain of New York, president of Dillon, Reed and Company and a director of American Viscose; and William Ewing of New York, partner of Morgan, Stanley and Company, and director of American Viscose."

• PTI Faculty Members

Bertrand W. Hayward, Director of the Philadelphia Textile Institute has announced the addition of two members of the faculty.

A full time professor of Industrial Management will be Robert C. Bokum of Charlotte, North Carolina. A graduate of P.T.I. and Penn State, Mr. Bokum also attended Harvard Graduate School of Business. He has been employed in production planning, budget control, and supervisory management positions by Mohawk Carpet Mills, Proctor & Schwartz, Burlington Mills and Tuftwick Corporation. During the last war he served with the Army Quartermaster Corps as a First Lieutenant in Philadelphia for two years, and spent two additional years in England and France as a supply officer. For the past two years, Mr. Bokum has been general manager of the Carolina Motor Club. In addition to management classes, Mr. Bokum will serve as advisor in correlating the increasing work on synthetic fibers through the textile departments of the school.

Another addition to the faculty is Edwin J. Owrid as instructor in Raw Materials of the Wool Industry. He was formerly associated with wool houses of Keyser, Fisler & Co.; Lewis & Grove; Chas. J. Webb Sons Co., Philadelphia; and M. Sabel & Sons, Louisville, Kentucky. He was also a buyer of bright wools of both states and territories; and a salesman of wool for the past forty years.

• Cranston Guarantee

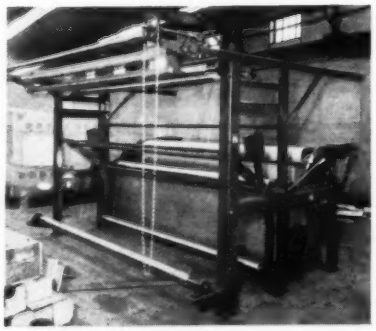
Cranston Print Works Company announced recently an unconditional, lifetime, money-back guarantee on all men's shirts made from Cranston printed fabrics. This is said to be the first time such a guarantee has been offered on a printed shirt fabric.

Guarantee tags are being offered by Cranston through their converters to all shirt manufacturers using Cranston-processed fabrics. The tags will carry the *Good Housekeeping* Seal of approval.

Any returns are made direct to Cranston, not to the retailer or manufacturer. All the manufacturer has to do is attach the tags. The guarantee protects manufacturer, retailer and consumer against inferior merchandise, assures them of Cranston fabrics that are printed with the fastest vat colors on high-count grey goods, and Sanforized.

• High - Speed Singeing Machine

Cook-P&N Machine Co., Inc., 365 Dorchester Avenue, Boston 27, Mass., announces a newly-designed vertical high speed singeing machine of all-steel fabrication. The machine shown is 126" face and is complete, ready to attach Kemp Radiant Flame Burners. Other features incorporate manual or automatic means of pulling the cloth away from the burners when the machine is stopped.



Cook-P & N Singeing Machine

The wet-out tank is of stainless steel with stainless steel immersion roll; squeeze rolls are rubber covered or one may be stainless steel covered.

Roll standards are of fabricated steel with sliding weight for pressure.

Machines are made in all widths; other models are available for acetate rayons.

• Blickman Data Sheets

S. Blickman, Inc., Weehawken, New Jersey, announces the availability of data sheets on the stainless steel dye box, stainless steel buckets, stainless steel dippers, and stainless steel pails.

The dye box is fully enclosed and designed to increase productivity in the dyehouse and improve quality of work. It is said to retain heat and moisture in the box, saving fuel and water. It is further said to eliminate waste motion during the entire dyeing cycle, and to speed up loading, heating, lacing, unloading and changeover.

The buckets, dippers and pails were described in our Annual Processing Review Number (December 13, 1948).

• Booklet on Ultrawets

A brochure describing the Ultrawets has been issued by the Chemical Products Division of the Atlantic Refining Company, 260 South Broad Street, Philadelphia 1, Pa. The Ultrawets are a series of water-soluble surface active agents belonging to the group of organic compounds called alkyl aryl sulfonates. These products are anionic in nature. Information is given on the available form of the Ultrawets, solubilities, performance tests, detergency and applications.

• Surfax 1288

The first in a new series of surface active agents has been developed by E. F. Houghton & Co., manufacturer of industrial oils, chemicals and leathers, it was announced recently. The new product, known as Surfax 1288, is a wetting agent which also is said to have excellent rewetting properties; it has no marked detergent properties. It is stated that it is economical in application as it is effective in extremely low concentrations.

The new wetting agent is reddish-amber in color and is water-soluble at all working concentrations. Where stock solutions are employed a mixture of one part of Surfax 1288 to four parts of water is recommended.

Another characteristic of Houghton's new product is said to be its excellent dispersing and retarding properties, which make it especially desirable as a leveling agent for dye baths.

Chemically classified as an aroyl sulfo propionate, it is anionic and performs best in neutral or mildly alkaline solutions at any temperature. It can be used successfully in acid solutions above a pH of 5 at room temperatures, but tests have shown that its wetting properties are lost in mineral acid and caustic solutions at boiling temperatures. It is resistant to hard water.

It is stated that application tests have shown that Surfax 1288 may be used effectively in many types of wet processing where an efficient wetting agent has been found to be advantageous. In the textile field its possible uses include compressive shrinkage (Sanforized fabrics); wetting out and dyeing hosiery, cotton, wool, synthetic yarns, and all types of knit and woolen piece goods. Another textile application is in package dyeing.

A product data sheet is available upon written request to E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

• New Sewing Machine

A new type "J" piece end sewing machine of an entirely new design is announced by William Birch (Engineers) Ltd., Manchester, England. Sole agent in the United States and Canada is the Trumeter Company, 1265 Broadway, New York 1, N. Y. The machine is intended for use in bleaching, dyeing and finishing plants or wherever it is necessary to sew a temporary seam for continuous processing.

This machine will sew wet or dry fabrics up to a combined thickness of 3/8". Three lengths of chain stitch are provided: 3/16", 3/8" and 5/8" long. The length of the stitch can be quickly altered with a small finger lever without the use of tools. The cloth feed is positive by means of a rotary feed wheel fitted with pins and this ring can be rotated forward to bring the cloth to the needle without turning the handle.

A bulletin describing this machine further is available upon request.

Type "J" Piece End Sewing Machine

• Standardization of Dyestuffs

A new method of standardization of finished dyestuffs for the textile industry has been instituted at Hilton-Davis, Cincinnati, under the direction of Richard Van Vyven, director of the customers' service laboratory.

The new method involves increased use of a spectrophotometer to measure the strengths of dyestuffs. More consistent results are now being obtained than through previous methods, Mr. Van Vyven announced.

• Guide for Milmer 1

A guide for formulating and applying Milmer 1, industrial preservative, is now available from the manufacturer, Monsanto Chemical Company.

Milmer 1, chemically copper-8-quinolinolate, is claimed to be one of the most powerful rot and mildew preventives known. It is said to be virtually nontoxic to man, does not irritate or sensitize the skin and is not decomposed by ultraviolet light.

The fifteen-page bulletin, based on extensive field and laboratory experience, gives detailed descriptions of the material, and minimum formulations and methods of application to properly protect textiles, plastic coated fabrics, protective coatings and other products.

• NACM Annual Meeting

The 95th Annual Meeting of the National Association of Cotton Manufacturers will be held at The Marshall House, York Harbor, Maine, on September 22nd and 23rd, 1949.

Details of the meeting and the program will be announced at a later date.

• Reorganization of Personnel, A. Gross

M. J. McCarthy, Vice President and Treasurer, who formerly directed sales, now is in charge of purchases, as the result of reorganization of the executive personnel of A. Gross & Co., 295 Madison Avenue, New York City, manufacturers of stearic acid, red oil, glycerine and fatty acids, announced by David Mahany, Chairman of the Board. Eugene W. Adams, Vice President, who had been Mr. McCarthy's assistant, now is in charge of sales under the new setup.

According to Mr. Mahany, the change is due "to the constant growth and expansion of our business in recent years, and in order to coordinate new departments with our present organization."

Other officers named in the reorganization are:

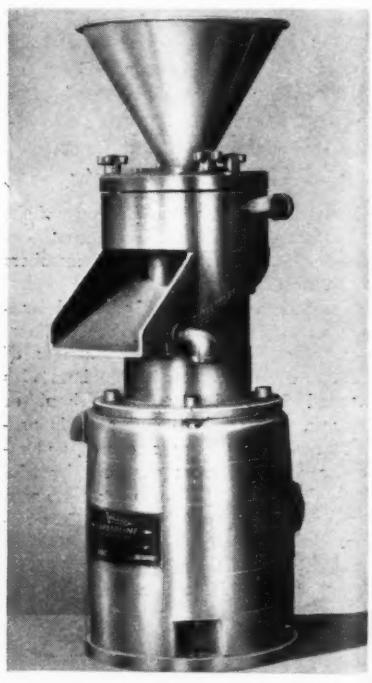
W. O. Robertson, Vice Chairman of the Board; Walter Hagedorn, President; John B. Blum, Vice President in charge of production. Ethel M. Hines, formerly assistant secretary has been made secretary.

• New Midget-Size Mill

Designed for custom runs and laboratory testing of chemicals, paints, inks and similar materials, a new midget-size mill which grinds, emulsifies, homogenizes, mixes, disperses and disintegrates has just been announced by Morehouse Industries, 1156 San Fernando Road, Los Angeles 31, Calif.

Measuring 10" in width and 31½" in height and weighing only 135 lbs., it is stated that this new Morehouse Model M has been thoroughly proved in actual plant service.

Noteworthy features are said to include specially-built but standard open type 3 H.P. motor, flex coupling between mo-



New Moorhouse Model M "Mighty Midget" Mill

tor and mill, sealed bearings requiring no lubrication, double-bearing spindle and precision-ground adjusting sleeve which assures perfect alignment between upper and lower stones at all times.

Complete details are available upon request to the manufacturer.

• To Distribute Celanese Chemicals

Celanese Corporation of America has completed arrangements with three Far Western firms to handle the distribution of its organic chemicals on the West Coast. Medford Chemical Company of Los Angeles will distribute Celanese chemicals for Southern California and Arizona. L. H. Butcher Co. of San Francisco and Carl F. Miller & Co., of Seattle will distribute the corporation's chemicals in their respective territories. Sherwin-Williams Co. in Oakland has been handling the distribution of Celanese acetic acid on the West Coast for the past three years.

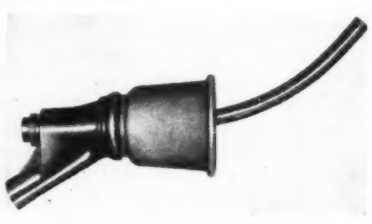
Products to be distributed include formaldehyde, acetaldehyde, acetone, methanol, n-propyl alcohol, other alcohols and solvents, and tricresyl phosphate. Materials for stock have been shipped from the Celanese Chemical plant near Bishop, Texas.

• Carbide & Carbon Appointment

Paul J. Doyle, Jr., who has been in charge of the Houston office of Carbide and Carbon Chemicals Corporation since 1947, has been appointed District Manager for the entire Texas area. Because of the rapid growth of the chemical industry in Texas, a separate sales district has been organized to serve this territory exclusively. Headquarters will be at 804 Travis Street in Houston. The Houston office was previously a part of the St. Louis District.

• Safety Carboy Drainer

A new "Wahlert Safety Carboy Drainer", manufactured by the Wahlert Safety Products Corporation, 25 Lafayette Street, Brooklyn 1, New York, is intended for use in conjunction with the company's "Carboy Tilter" to make the handling of acids a safe and simple procedure. Scientifically designed, the "Safety Carboy Drainer" is said to pour but not spill and splash. Uninterrupted liquid flow is said to be guaranteed through an ingenious air vent which makes pumping or syphoning unnecessary. Every part is replaceable; its soft rubber neck fits different sized carboys; and the vent and spout are made of hard, durable, acid-proof rubber. Three sizes are available. Descriptive literature may be obtained.



Wahlert Safety Carboy Drainer

• Swift Appointment

F. E. Lacey, who has been head of the industrial oil department of Swift & Company since 1944, has been appointed manager of the Technical Products Plant of Swift located at Hammond, Indiana.

Mr. Lacey joined Swift & Company in 1926, shortly after being graduated from the University of Missouri. In the 22 years since then he has been associated with the fat and oil business of the company. He was appointed manager of the industrial oil department in 1944. Growth of this phase of the company's business is reflected in the new industrial oil plant at Hammond. This new unit processes fat and oil for use in the manufacture of lubricants, rubber, textiles, soap, cosmetics, linoleum, paint, and many other industrial products.

• Monsanto Appointment

Monsanto Chemical Company has announced the appointment of John B. Trotter as assistant general branch manager of its Birmingham sales district, which comprises the Southeastern states and has its headquarters at Birmingham, Alabama. George Y. Frankle is general branch manager of the Birmingham district.

• Oil Chemists' Officers

Election of officers at the 40th annual meeting in New Orleans May 10-12, 1949, is announced by the American Oil Chemists' Society as follows:

President—V. C. Mehlenbacher, Swift and Company, Chicago.

Vice President—J. R. Mays Jr., Barrow-Agee Laboratories, Inc., Memphis.

Members-at-large—A. E. Bailey, Girdler Corporation, Louisville, Ky. T. H. Hopper, Southern Regional Research Laboratory, New Orleans. L. B. Parsons, Lever Brothers Company, Cambridge, Mass.

Secretary—H. L. Roschen, Swift and Company, Chicago.

Treasurer—J. J. Vollertsen, retired in 1946 from Armour and Company, Chicago.

Past presidents who will serve on the Governing Board with the officers are C. P. Long, Procter and Gamble, Cincinnati; R. T. Milner, Northern Regional Research Laboratory, Peoria; S. O. Sorensen, Archer-Daniels-Midland Company, Minneapolis; and R. R. King, Mrs. Tucker's Foods Inc., Sherman, Tex.

A number of appointments are also announced: A. R. Baldwin, Corn Products Refining Company, Argo, Ill., as chairman of the Journal committee and editor of the *Journal of the American Oil Chemists' Society;* Lucy R. Hawkins, as executive secretary; K. S. Markley, Southern Regional Research Laboratory, New Orleans, as representative of the A.O.C.S. in the American Association for the Advancement of Science; and D. S. Bolley, National Lead Company, Brooklyn, N. Y., and Mr. Sorensen as representatives on the technical cooperative committee of the National Paint, Varnish, and Lacquer Association.

The Referee Board will again be comprised of the following:

A. S. Richardson, *Chairman,* Procter and Gamble, Cincinnati.

G. W. Agee, Barrow-Agee Laboratories, Memphis.

J. P. Harris, Industrial Chemical Sales division, West Virginia Pulp and Paper Company, Chicago.

R. R. King, Mrs. Tucker's Foods Inc., Sherman, Tex:

V. C. Mehlenbacher, ex-officio, Swift and Company, Chicago.

Price of the Methods of Analysis was raised from $6 to $7.50, and the price of Separate sets of Revisions, such as 1947, 1948, and the forthcoming 1949 set, from 50c to $1 each.

The 1950 meeting of the Society will be held in Atlanta during the first week in May and in San Francisco in early fall.

• Atlas Mineral Appointment

Joseph Dahle, formerly research direc-

Joseph Dahle

tor of Symco Chemical Corporation and Aspinook Corporation, has been appointed director of research for The Atlas Mineral Products Company.

• Canadian Technical Textile Federation

On April 23rd, the delegates from the five component associations of the Canadian Technical Textile Federation had an all-day session to hear the president's report and to plan future activities.

A report was read from the committee which had studied the possibility of a universal numbering system for yarns and fibers. The committee recommended that Canada be represented at the next international conference on standards and the system adopted should be based on the metric system. Plans were made to cooperate with the Primary Textile Institute to this end.

Officers elected for the coming year are as follows:

William Buck—*President.*
Henry K. Torpey—*1st Vice-President.*
Victor Grantham—*2nd Vice-President.*
J. A. Dixon—*Secretary-Treasurer.*
Harvey Smith — *Assistant Secretary-Treasurer.*

• Homogesol P

Woonsocket Color & Chemical Co., Woonsocket, Rhode Island, announces production of Homogesol P, a special stabilized methylol urea condensate said to be primarily suited for crease resistance and shrink resistance finishes on rayon and cotton fabrics. It is stated that it does not produce any appreciable stiffening of the fabric.

Homogesol P is a white paste which is said to dissolve completely in water to form a clear colorless solution which is neutral to very slightly alkaline in reaction. It is stated that when stored under favorable conditions its useful life is about two months. It is further stated that it contains an inorganic salt which has enabled many mills to cut down considerably in their resin bath formulation.

• Westvaco Chicago Manager

A. L. Crane, previously in charge of the Detroit District Sales Office, Westvaco Chemical Division, Food Machinery and Chemical Corporation, has been appointed District Sales Manager at Chicago. In his new position, Mr. Crane will supervise sales activities of Westvaco's Chicago, Detroit, Cleveland and Cincinnati offices. P. H. Hall continues as District Sales Manager at Cleveland while J. M. Rousmaniere is the newly appointed Westvaco District Sales Manager at Cincinnati.

• New Finish For Rayon Marquisette

A new durable finish for rayon marquisette has been developed by Powdrell & Alexander, Inc. from American Cyanamid Company's Sheerset resins, according to Earle C. Powdrell, executive vice president. The new marquisette finish is said to make possible a wide range of tubfast and sunfast pastel shades that are lastingly crisp and to keep their size and shape throughout commercial laundering or home washing. It is stated that it also allows fabric to be dyed in the piece rather than in the yarn, thus substantially cutting down the time required between manufacture and delivery, and reducing inventories of dyed yarns.

The new finish, in addition to making starching unnecessary, is said to be resistant to soot and dust. It is stated that tests have shown that this new type of rayon marquisette may be freshened by lightly shaking and hanging on the line in the wind for a few hours and that the fabric when washed and simply hung up on the line, dries wrinkle-free and fresh. The Sheerset Finish is also said to protect the rayon fabric against damage from silverfish.

The rayon marquisette to which the new finish is applied was designed and developed in Powdrell & Alexander's mill in Danielson, Conn., where the cloth is manufactured and woven and also finished.

• Officers and Directors of TCCA

Two new directors were elected for the ensuing year at the 34th annual business meeting of The Textile Color Card Association, held March 31 at the headquarters of the organization, 200 Madison Avenue. They are Jules L. Foreman, President of Foreman Fabrics Corp., and Robert A. Ramsdell, Manager of the Nylon Division of E. I. du Pont de Nemours & Co., Inc.

The following were re-elected to the Association's Board of Directors for the coming year:

E. Irving Hanson—Vice-President, Hafner Associates, Inc.

Allan C. Jacobson—Director-Sales Mgr., Women's Wear Dept., J. P. Stevens & Co.

Charles F. H. Johnson, Jr.—Vice-President & Gen. Mgr., Botany Mills, Inc.

Carl E. Kempf—President, Brewster Hat Co., Inc.

W. Ralph MacIntyre—President, Joseph Bancroft & Sons Co.

James F. Marble—President, Waldrich Co.

Armand Schwab—President, Armand Schwab & Co.

Roy E. Tilles, Sr.—President, Gotham Hosiery Co., Inc.

Henry C. Van Brederode—Vice-President, Celanese Corp. of America.

John F. Warner—President, Riegel Development Laboratories, Inc.

At a meeting of the Board of Directors, held immediately after the business session, all present officers were re-elected as follows:

President: Roy E. Tilles, Sr.
1st Vice-Pres.: Armand Schwab.
2nd Vice-Pres.: John F. Warner.
Treasurer: Carl E. Kempf.
Secretary and *Managing Director:* Margaret Hayden Rorke.

Immediately following the meeting, the Association's Board of Directors tendered an informal luncheon at the Empire State Club to the 87 members of the Association's official color committees. These comprise the Woolen, Rayon, Hosiery, Glove, Millinery, Men's Hat, Shoe and Leather, consisting of tanners, shoe manufacturers and shoe retailers, and the Dyestuff Advisory Committees.

• Receives N.A.C.E. Award

F. L. LaQue was the recipient of the Frank Newman Speller Award in Corrosion Engineering of the National Association of Corrosion Engineers at the Annual Banquet of the Association on Wednesday evening, April 13, at the Netherlands-Plaza Hotel, Cincinnati, Ohio. The award, presented annually by the N.A.C.E., is made in recognition of outstanding contributions in science and engineering as pertaining to the field of corrosion.

Mr. LaQue is in charge of the Corrosion Engineering Section of the Development and Research Division of The International Nickel Company, Inc., at New York. He has been a Vice President, member of the Executive Committee and Board of Directors of the N.A.C.E., and during the past year has served as the Association's President. His principal activities with International Nickel are in connection with the practical aspects of corrosion and the properties of corrosion resisting metals and alloys.

• New Instruments Developed at ITT

Development of two devices, a cloth inspection machine and a uniformity meter, has been announced by the Institute of Textile Technology at Charlottesville, Virginia. The cloth inspection machine incorporates a new system which permits an inspector to view a stationary image of rapidly moving cloth, thus reducing eye fatigue and increasing efficiency. The uniformity meter measures and makes a permanent record of the uniformity of yarn, roving, sliver or other filamentary material.

Mildew Resistance Tests

(Continued from page 436)

Results

The test results obtained with the samples treated with copper compounds are shown in Figures 1 and 2. It may be seen that *Aspergillus* 37 *(A. fumigatus)*, *Humicola* 9.1, *Gliomastix* 95, and *Penicillia* 15.1 and 49.1 were all very decidedly more copper-tolerant than either *Chaetomium globosum* 1042.4 or *Myrothecium verrucaria* 1334.2, with *Thielavia* 46 and *Aspergillus* 45 *(A. terreus)* being intermediate in tolerance.

Table I presents data on the behavior of fabric treated with pyridyl mercury stearate in pure culture tests and in soil burial. Among the fungi used in pure culture, a high degree of mercury tolerance may be noted particularly in *Penicillia* 15.1, 33, 49.1 and 68. The soil burial tests were very severe in all of the four soils which were used. Soil burial tests are believed to have been found unusually severe on mercury-containing fabric preservatives in many other laboratories.

Heavy metal tolerance is believed to be common among the soil-inhibiting fungi. It seems reasonable to believe that it accounts in no small part for the severity of the soil burial test on fabrics proofed with copper-containing preservatives and may be similarly important in the case of materials containing compounds of mercury or zinc. For routine laboratory use the soil burial test as carried out at Beltsville has appeared to be simple, practical, and informative. Its application obviously should be confined primarily if not exclusively, to articles and protective agents expected to encounter soil contact in service, although procurement officers in some cases may wish to provide

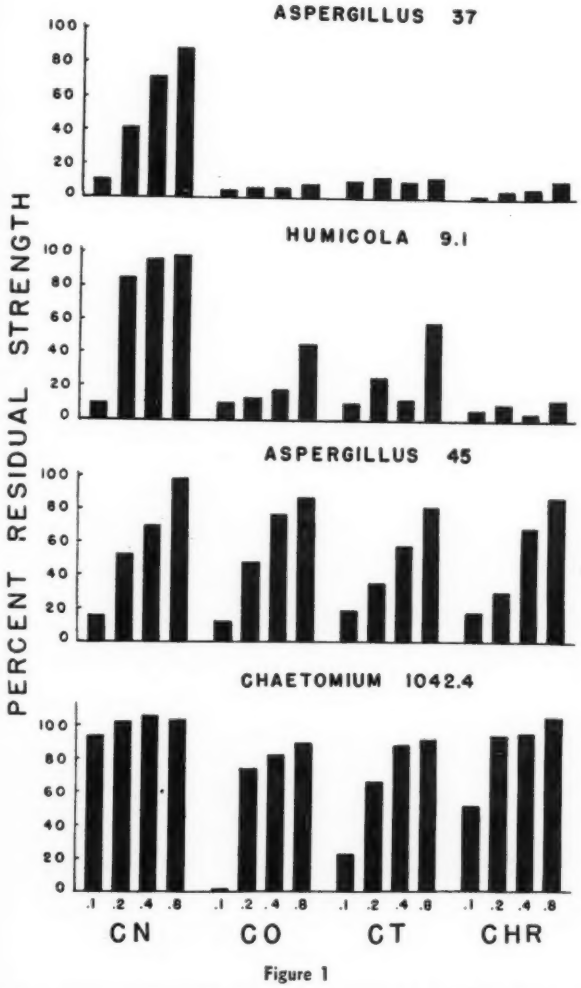


Figure 1

Performance of three different fungi in comparison with Chaetomium globosum 1042.4 in mildew resistance tests of 8-ounce cotton duck treated with four copper-containing mildew preventives. CN = copper naphthenate, CO = copper oleate, CT = copper "tallate", and CHR = copper hydrogenated resinate, each compound applied at rates equivalent to .1, .2, .4, and .8 percents of copper on the fabric.

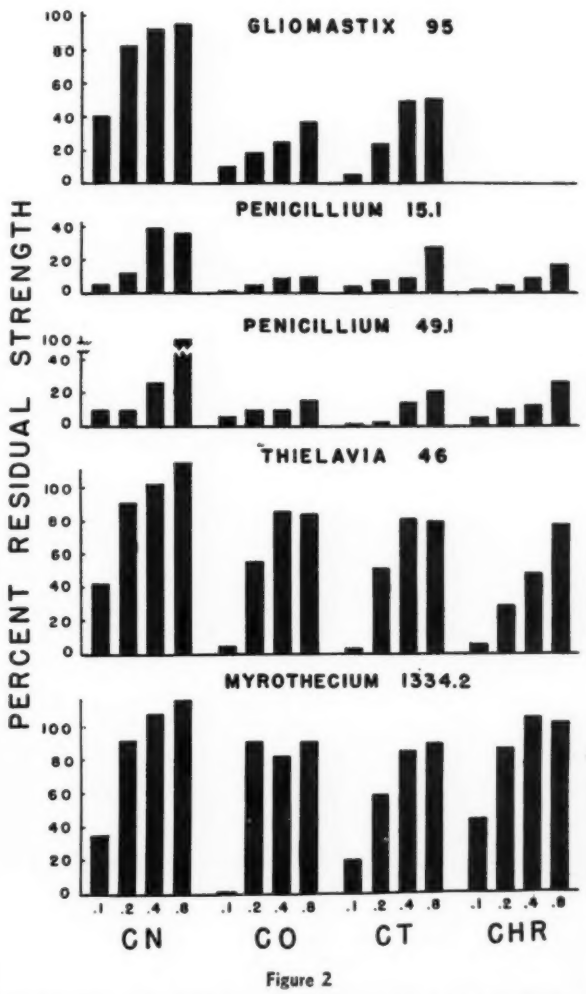


Figure 2

Performance of four different fungi in comparison with Myrothecium verrucaria 1334.2 in mildew resistance tests of 8-ounce cotton duck treated with four copper-containing mildew preventives. Symbols as in Figure 1.

TABLE I

Percent residual strength of untreated and pyridyl mercury stearate-treated 8-ounce cotton duck after pure culture and soil burial tests.

Fungi and Soils	*Percent mercury on fabric*					
	0	*.025%*	*.05%*	*.10%*	*.20%*	*.30%*
Pure Culture Tests						
Aspergillus #45	20	37	64	103	103	100
Chaetomium sp. #91	0	97	96	102	96	100
Chaetomium globosum USDA 1042.4	0	97	97	99	102	97
Gliomastix convoluta #95	0	87	91	102	97	101
Myrothecium verrucaria USDA 1334.2	0	98	97	103	96	97
Penicillium #15.1	0	0	0	40	50	100
Penicillium #33	0	0	0	0	9	86
Penicillium #49.1	0	0	6	14	22	81
Penicillium #68	0	4	3	7	14	10
P. piscarium #9052	0	13	53	96	97	100
P. luteum #10125	0	96	96	103	104	104
Soil Burial Tests						
Carrington Soil (Nebr.)	0	0	0	0	9	20
Chester Soil (Md.)	0	0	0	0	0	5
Compost Soil (Greenhouse)	0	0	0	0	0	0
Muck (Mich.)	0	0	0	0	6	12

articles with protection against situations which are actually anticipated to be infrequent or rare in their normal service life.

Metal-tolerant cellulose-decomposing fungi may be isolated from soils very readily by simply streaking a soil suspension upon filter paper which is impregnated with the desired mildew preventive compound and which rests on the surface of mineral-salts agar in Petri dishes. The use of such fungi in textile tests is practicable in some cases, but interpretation of the results obtained needs to be made with care. As with the soil burial test, it is entirely possible by the use of fungicide-tolerant organisms to give an unwarranted "unsatisfactory" rating to materials which may in fact be moderately or even highly satisfactory under actual service conditions. Such articles and protective agents may only rarely encounter in service a biological hazard as severe as that specified in the test and may be entirely satisfactory in respect to the numerous other important properties required. It may readily happen also that textiles and protective treatments which stand up remarkably well against numerous organisms in pure culture do not have the requisite persistence on the textile during weathering or other important properties. As a method of checking the persistence of a mildew preventive on fabric during weathering, *Chaetomium globosum* may be used by simply applying the test as here described to the weathered fabric either with or without sterilization. While there seems no reason to question the conclusion of other workers that irradiation causes some increase in the resistance of cotton to attack by micro-organisms *(1, 2)*, in our experience even fabric which has been subjected to prolonged periods of sunlight of high intensity will suffer marked tendering in tests with this fungus either with or without sterilization of the fabric.

Literature Cited

1. Jarrell, T. D., Stuart, L. S., and Holman, H. P. Mildewproofing khaki and other mineral-dyed cotton duck with copper compounds. Am. Dyestuff Reptr. *26*, 495-500, 519-23 (1937).
2. Wagner, R. P., Webber, H. H., and Siu, R. G. H. Effect of ultra-violet light on cotton cellulose and its influence on subsequent degradation by micro-organisms. Arch. Biochem. *12*, 35-50 (1947).
3. White, W. L., and Downing, M. H. The identity of "Metarrhizium glutinosum." Mycologia *39*, 546-555 (1947).

Book Reviews

114 Check Points on How to Prevent Grievances

By Bleick von Bleicken and Carl Heyel, The National Foremen's Institute Inc., Deep River, Connecticut

This "workbook", as it might be called, is a sound addition to the management-training material available for use in round-table discussion groups. The authors, a New York management consultant, and the Assistant to the President of Lehn and Fink Products Corporation, have created something of practical value to responsible divisional and departmental executives, often the forgotten men in company training programs which usually skew toward the foremen and sub-foremen rather than toward the middle and upper-middle levels of management. The amount of attention commonly given by both management and labor to hearing, discussing, and disposing of grievances frequently obscures the need for *preventive* action in fields where recognition and early treatment may well eliminate complaints before they become grievances and start through the "procedure" defined in company policy and/or the union contract. These splendid check lists should receive a warm welcome from executives with grievance problems and a most enthusiastic reception from industrial trainers and conference leaders.—J. R. R.

Formula for Supervision

By H. W. Heinrich, Assistant Superintendent, The Travelers Insurance Co., The National Foremen's Institute, Inc., Deep River, Connecticut

This booklet announces itself as "A Manual For Supervisors and Executives". In so doing it should make it clear to every reader that it is not just one more addition to our bulging files of supervisory training materials gathered over the past ten years. While the four-step "formula" presented is no self-assured cure-all, its direct, practical applications in typical operating problems are presented in readable and workable fashion with good case material. The divisions in both content and treatment lend themselves, by their adaptability, to use in the periodic management conference as well as in the more tightly-programmed training course. The best feature of the booklet from our point of view is its recognition of supervisory problems as a matter of general concern to office managers and staff executives as well as to the line supervision. The case material here presented should make plain to every reader that personnel problems "out front" can be and often are as vexing as the human relations tangles among the "boys in the back shop." Mr. Heinrich's presentation blueprints the simple, effective ways for handling them. —J. R. R.

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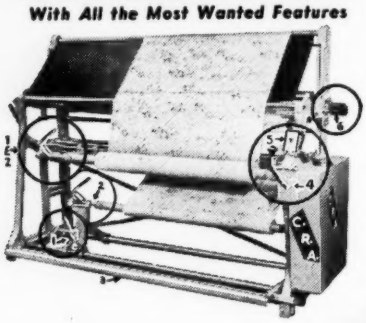

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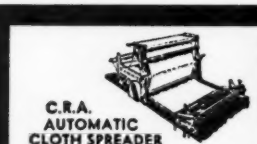

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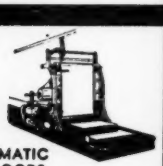

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BURKART-SCHIER CHEMICAL CO., CHATTANOOGA, TENN.

• CLASSIFIED ADVERTISEMENTS •

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery wanted or for sale—the rate is $7.50 per column inch or less per insertion.

FINISHER WANTED: Nationally known textile organization in South wants a qualified finisher who has had experience on flat goods and underwear crepe. Man should have very sound synthetic fabric background. Please write giving full particulars on experience, background and some indication of salary desired. Write Box No. 599.

CONFIDENTIAL EMPLOYMENT SERVICE: For Dyers, Chemists, Colorists, Managers, Superintendents and others seeking positions and for employers seeking men. Attractive positions paying splendid salaries open for capable men. Charles P. Raymond Service, Inc., 294 Washington St., Boston, Mass. Over 50 years in business.

WANTED—Finisher for modern piece goods finishing plant. Must be experienced with all types of synthetic, spun and filament fabrics. Also must be experienced with resin finishes. Write Box No. 628.

Experienced Jig Dyer, second shift, high grade New York City dyehouse. Top salary. Detailed experience. Replies held confidential. Write Box No. 636.

POSITION WANTED: Textile Chemist, Age. 29, broad experience in wet processing and dyeing of cottons and rayons. Formerly in charge of laboratory and dyehouse of well known organization. Superintendent material. Write Box No. 635.

Experienced chemist and chemical engineer desires responsible position with company producing chemical products for finishing textiles. New products developed; plant production supervised. Write Box No. 624.

WANTED: Position as laboratory head and supervisor, application research, mill work demonstration, catalogue work, technical interviews, correspondence; 30 years' experience. Southwest location desired. Write Box No. 639.

CHEMIST — TEXTILE

GRADUATE CHEMIST for company in Metropolitan New York Area manufacturing textile auxiliaries. Require textile manufacturing experience or textile auxiliary application experience. State education, age, experience. Write Box No. 640.

THE PROCTER & GAMBLE COMPANY, Textile Research Department, has excellent opportunities for Chemical Engineers and Textile Chemical graduates, preferably with 2-5 years' textile laboratory or cotton dyeing and bleaching experience. These positions consist of research and development work in the Procter & Gamble laboratories and technical service work in the textile industry. Replies held in confidence. Textile Research Department, The Procter & Gamble Company, Cincinnati 17, Ohio.

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• CLASSIFIED ADVERTISEMENTS •

POSITION WANTED—Manager-Superintendent, commission dyeing and finishing. 25 years' experience on wool, worsted, cotton rayon and blended fabrics. Piece yarn and stock dyeing. Textile and business school trained. Excellent references. Write Box No. 641.

POSITION WANTED: Wool Dyer & Finisher, chemist graduate, age 33. Tops, skein yarns, worsted pieces and union fabrics, blends matching and laboratory, also cotton dyeing, high experience, perfect knowledge Spanish. Steady responsible position. Write Box No. 643.

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OTHER TYPE COPY WILL NOT BE ACCEPTED

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In New York...
STORAGE and DISTRIBUTION
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STORAGE & WAREHOUSE CO.
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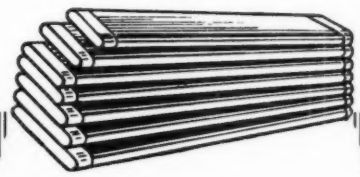

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From start to finish Laurel Wool Oils and Soaps will process your wool efficiently, without injury to fibers . . . leave it properly conditioned for clear, level dyeing. For 40 years favorites with leading textile mills.

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Laurel
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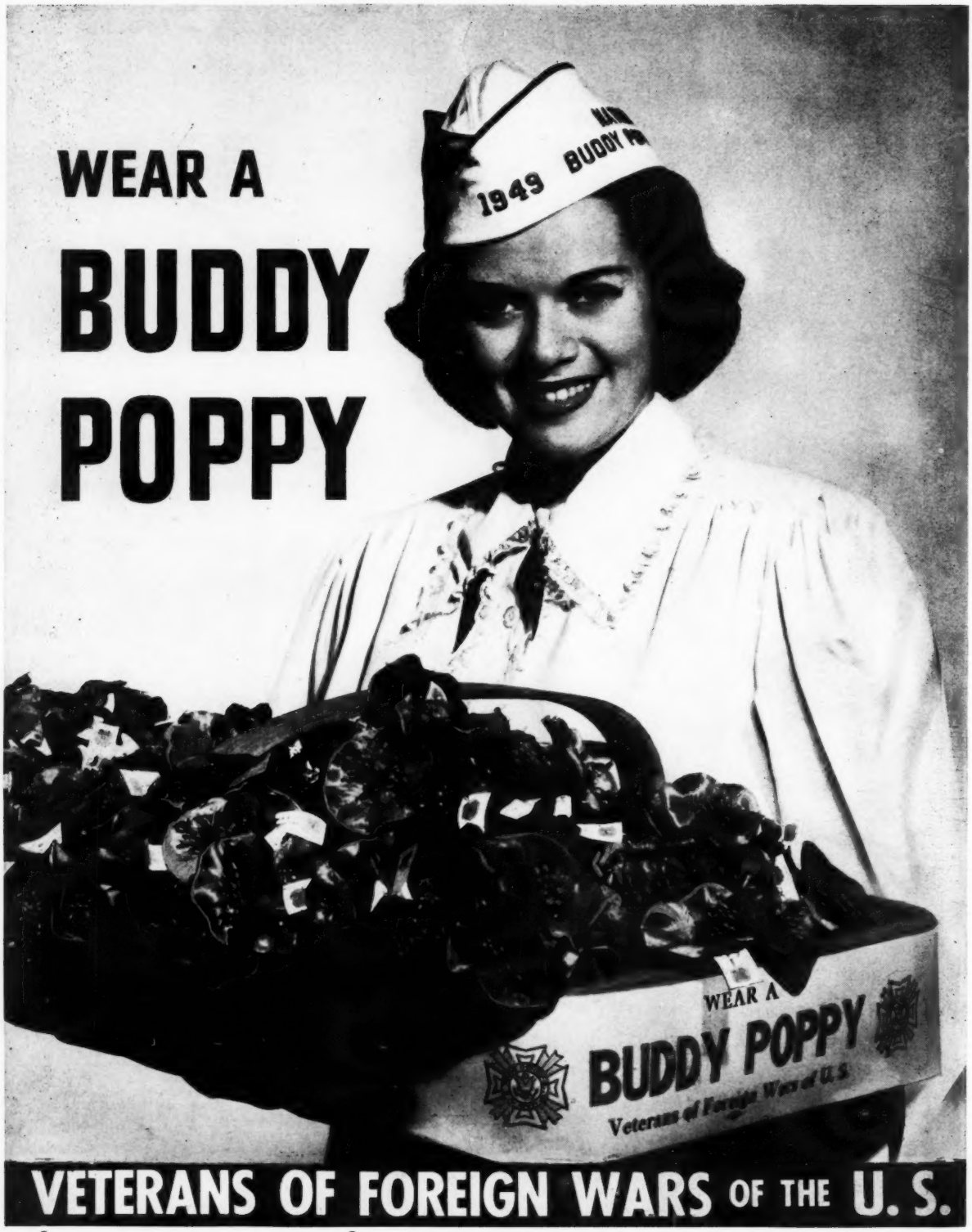
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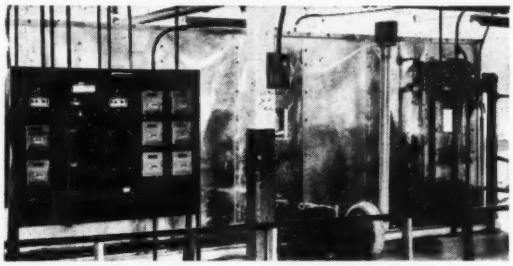

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INDUSTRIAL HEATING ENGINEERING

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It's ECONOMICAL!

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A *new* color, fast to light, washing, ironing and heat.

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It leaves Acetates white, discharges clean and stands T.B.L. Finish.

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Dyes rayon and mercerized cotton the same tone.

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Manufactured by

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35.5-37.0% Al_2O_3 content

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WHICH SHOULD WARRANT YOUR ATTENTION

*AQUAROL: A water repellent for processing woolen, cotton and rayon fabrics, also produces excellent results in splashproofing or finishing all types of hosiery.

*PARAMINE T A: A cation active softener for processing cotton and rayon cloth to obtain a soft, smooth, pleasing finish.

ANTHOMINE: Auxiliary used in all wool dyeing processes to produce a uniform shade and impart a soft pleasing hand to stock, yarn and cloth. Improves exhaustion of dye bath and increases color yield. Very effective for levelling shade of tippy and mixed wools.

*PARAPON S A: A highly efficient leveler and softener for dyeing and finishing all types of yarn, cloth and hosiery to produce a uniform dyeing and a soft full hand.

*ARIPEL F S: Finish and gas inhibitor for processing dyed acetate rayon—produces a soft, full feeling finish and prevents gas fading of the color.

*LANITOL F: A synthetic detergent possessing exceptional scouring and washing properties for processing wool, cotton, rayon or nylon.

*ALGEPON V A: Auxiliary used in dyeing vat colors to retard reoxidation of the reduced bath and produce a solid and uniform shade—also effective in stripping vat dyeings.

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*DIAZONOL A C: For boiling out cotton cloth in pressure or open kiers to produce greater absorbency and cleaner material. Excellent for pre-boiling knitted cloth in preparation for chlorine bleach. Also used with good results for boiling out cotton or rayon cloth on the jig.

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Newark, New Jersey
Manufacturers of Industrial Chemicals for Over 40 Years

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30, 1949

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MR. WOOL PRODUCTS MANUFACTURER:

Why make it shrink-resistant—
if you can't wash it---

It's a question that you, Mr. Wool Products Manufacturer, should ask yourself (and answer, too!) NOW!

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SAFE TO TUB • SAFE TO RUB

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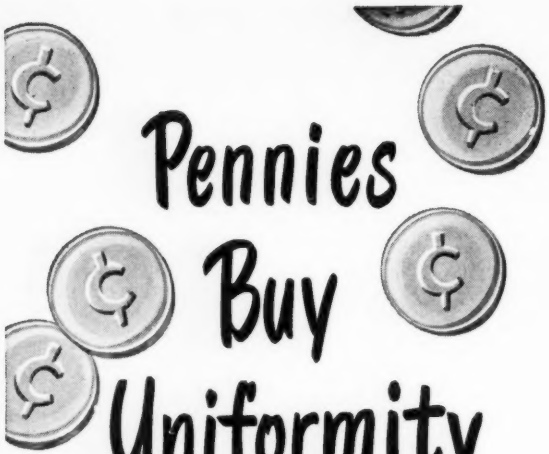

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SOLVAY
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LIQUID CHLORINE

You pay far less for your bleaching agent when you specify SOLVAY LIQUID CHLORINE. Yet its efficiency and uniform results have been proved over and over again through long usage.

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BOOTH No. 44

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The new Hunter "Jet Kettle" embodies the only positive circulation system available in a Piece Dye Kettle, a system which insures even temperature from front to back and, therefore, eliminates the necessity of turbulent boiling to obtain level and even dyeing, and eliminate streaks and shadiness.

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FOR MANY

UNUSUAL MATERIALS

FOR

DYEING

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THAT ARE

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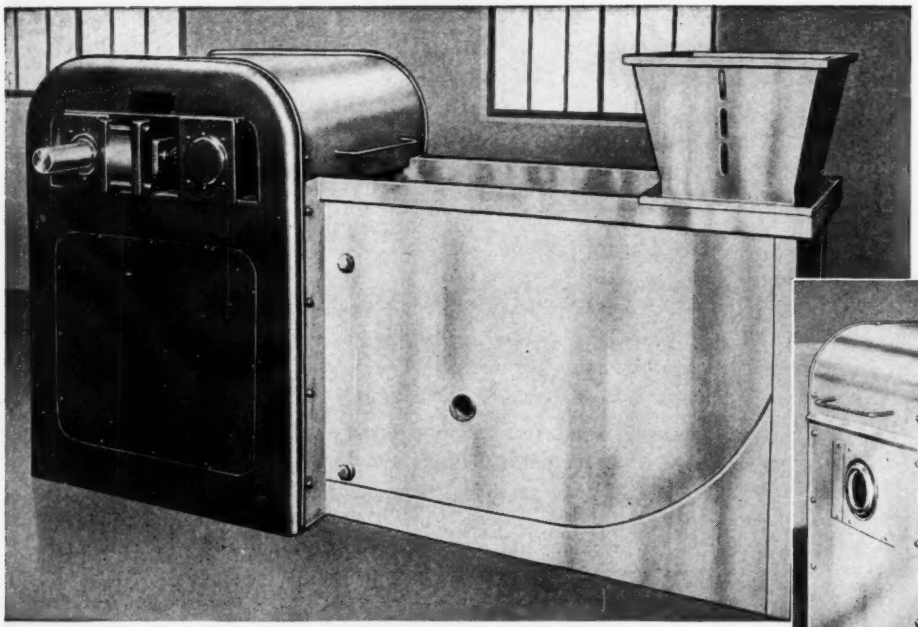
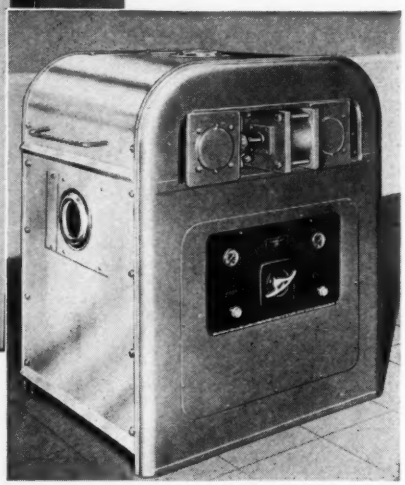


Front view of the new Butterworth Rope Squeezer. Frame work, bearings, rolls, air cylinders and control mechanism are interchangeable with Saturator shown at left.



Side view of the new Butterworth Horizontal Rope Saturator. Note streamlined, compact design and stainless steel closures.

Simplified High-Speed Bleaching

With the new Butterworth Horizontal Rope Saturator and the new Butterworth Rope Squeezer you can achieve higher speeds, better bleaching and better handling of goods during continuous bleaching operations. These new machines are more flexible, more interchangeable than any conventional saturators and squeezers now in use. There's no loss of production time.

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Check some of the features and advantages of these new machines: faster operating speeds, streamlined design, closures made of stainless steel; rollers completely enclosed to protect workers and keep dirt out; compact, easy to reach controls, gentler handling of goods, 3-position poteye panels, plus many additional features.

The new Butterworth Horizontal Rope Saturator and the new Butterworth Rope Squeezer are two major steps in standardizing and simplifying continuous bleaching operations. If you want to standardize continuous bleaching operations, if you want to obtain better bleaching results and greater production, then get all the details on these two new machines now. Write or call:

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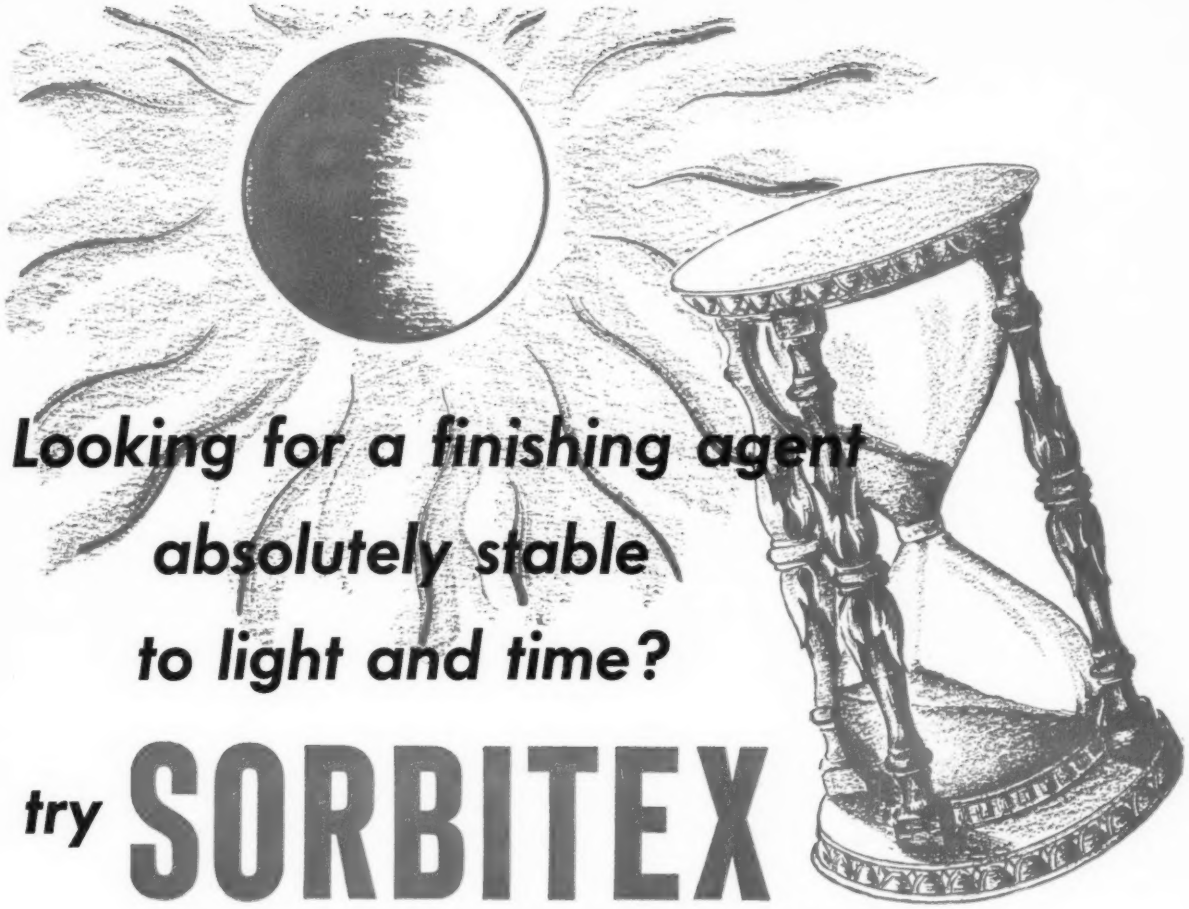

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SORBITEX is a smooth white paste composed of a blend of synthetic softening agents. It is readily soluble in warm water, forming solutions which are resistant to hard water, salts, acids or alkalies.

SORBITEX is recommended as a finishing agent for cotton, rayons, and acetates. It is particularly suited for use on high grade fabrics where a soft, full-bodied hand is desired. Finishes obtained with SORBITEX are stable and will not discolor or develop an odor regardless of the length of storage.

Write today for a generous sample of SORBITEX and complete information on its use in your finishing processes.

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Add extra sales appeal to all fabrics with Drytex. Retain natural draping qualities, keep the fabric's natural "feel," its attractive appearance. Gain extra qualities customers want and search for.

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For water repellent fabrics with natural consumer appeal —choose Drytex—product of Royce Chemical Company.

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